DOCUMENT RESUME

ED 425 749 IR 057 248

AUTHOR	Mahmood, Khalid
TITLE	Information Technology in Libraries. A Pakistani Perspective.
ISBN	ISBN-969-8133-21-6
PUB DATE	1998-00-00
NOTE	255p.; Introduction by Aris Khurshid.
AVAILABLE FROM	Pak Book Corporation, 2825 Wilcrest, Suite 255, Houston, TX 77042; e-mail: pbc@brain.net.pk (Rs. 395).
PUB TYPE	Books (010) -- Information Analyses (070) -- Reports - Descriptive (141)
EDRS PRICE	MF01/PC11 Plus Postage.
DESCRIPTORS	Cataloging; *Computer Software; Developing Nations; Foreign Countries; Higher Education; *Information Technology; Integrated Library Systems; Librarians; *Libraries; *Library Automation; *Library Development; Library Education; Library Services; Literature Reviews; Online Catalogs; Professional Continuing Education
IDENTIFIERS	*Library Computer Systems; Library Security; *Pakistan

ABSTRACT

This book presents an overview of the present status of the use of library automation hardware and software in Pakistan. The following 20 articles are included: (1) "The Status of Library Automation in Pakistan"; (2) "Promoting Information Technology in Pakistan: the Netherlands Library Development Project"; (3) "Library Software in Pakistan"; (4) "The Best Library Software for Developing Countries: More than 30 Plus Points of Micro CDS/ISIS [Computerized Documentation System/Integrated Set of Information Systems]"; (5) "Micro CDS/ISIS: What's New in Version 3.0"; (6) "Use of Micro CDS/ISIS in Pakistan: A Survey"; (7) "Do You Need a Lamp To Enlighten Your Library: An Introduction to Library Automation and Management Program (LAMP)"; (8) "The Development of the LAMP Software for Use in Developing Countries and Its Marketing in Pakistan"; (9) "Online Public Access Catalogue (OPAC) at Department of Library Science"; (10) "Information Technology Education in Pakistani Library Schools"; (11) "The Technology Challenge and Continuing Education for Pakistani Librarians"; (12) "Information Technology and Library Education in Pakistan: Recent Developments in the Curriculum"; (13) "Information Technology in Library Schools: A Case Study of the University of the Punjab"; (14) "PLA [Pakistan Library Association] Computer Training Center, Lahore: Three Years of Success"; (15) "Library and Information Services in Pakistan: A Review of Articles Published in Foreign Journals: (16) "Pakistani Librarianship during 1990s: A Literature Review"; (17) "Emerging Trends in Technical Services in Libraries: A Training Experience in Pakistan"; (18) "Cataloguing Practice in University Libraries: A Comparison of Three Developing Countries (Pakistan, Malaysia, Saudi Arabia)"; (19) "Subject Cataloguing in Pakistani Libraries"; and (20) "Let's Save Our Cultural Heritage: An Introduction to Library Security System." Each article contains references. (DLS)

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INFORMATION TECHNOLOGY IN LIBRARIES

A PAKISTANI PERSPECTIVE

Khalid Mahmood

Introduction by
Dr. Anis Khurshid

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(President's Award for Pride of Performance)

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First published in Pakistan by:

Pak Book Corporation

Aziz Chambers, 21 Queen's Road
Lahore

Modern Way Block, Aabpara Lane, G-6/1/1
Islamabad

Star Centre, Main Tariq Road, PECHS
Karachi

Produced by
Dar - ut - Tazkeer
Rehman Market, Ghazani Street,
Urdu Bazar, Lahore - 54000
Tel 7231119

Khalid Mahmood
Information technology in libraries: a Pakistani perspective / Khalid Mahmood ; introduction by Anis Khurshid.

ISBN 969-8133-21-6
1. Libraries—Automation—Pakistan
I. Anis Khurshid II. Title
025.04095491—dc21 1998

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Introduction

A Few Words about Khalid Mahmood's Research Articles on Library and Information Science (1993-97)

Dr. Anis Khurshid

The development of computer technology, which has received national attention in our country as well, is of a recent origin dating back to some five decades or so. It was, however, in the 1966 Conference of the American Library Association (ALA) at New York that Gordon Ray, in his keynote address, presented an outline of a computer-assisted document delivery system and cautioned librarians to a formidable challenge that such a system poses to the traditional book. It was also in that Conference that the then president of the ALA, Prof. Mary V. Gaver, in her presidential address had, therefore, required of librarians to become "Masters of raging books, rather active—even aggressive partners—with educators and with the whole body of ... [potential] users of our resources ... in our communities."

In this situation, a mixed reaction was quite apparent in the library scenario of America which then had emerged as a world library leader. While America was not fully prepared to use machines in book-services of their libraries, there was a group led by no less a person than the then Librarian of Congress, Quincy Mumford, who advocated full automation or no automation at all for his mega library.

The deluge of literature all over the world at the same time was becoming uncontrollable with the traditional library methods. The problem resulting out of proliferation of information in the literature was creating anxiety among the researchers who wanted their needed information much faster and without loss of time.

Along the growth of literature the computer/information technology has grown much too faster. The mainframe computer, versatile, bigger in size and most expensive was marketed in 1960 on rental basis. The microcomputers developed later were slightly slower and smaller but were inexpensive. Those which came in late 1970s were the smallest and less expensive of all. The computerized library networks, operating in 1980s, were modelled on traditional library functions. Later development in technology has helped develop a number of global networks with faster reachout services to most parts of the world. Important among them are

Research Libraries Information Network (RLIN) and On-line Computer Library Center (OCLC) both are American-based. These networks have surpassed the services of the world's largest library, the Library of Congress at Washington, D.C. The coming years will perhaps witness the displacement or down-sizing of the RLIN, which according to a report in early 1990's published in the *Library Journal*, was examining the inter-system link with OCLC thereby making it the 'information giant' of the ensuing 21st century.

These developments have enabled libraries all over the world to tremendous sharing of one others' resources and services much faster with the help of information/communication technologies including CD-ROM technology which has already begun to replace on-line databases. The 21st century is bound to directly affect the academic and research libraries. Books will not be totally replaced but libraries' technical services will perhaps be replaced by automated and on-line direct access to the resources and services of our libraries.

In this backdrop, Pakistan, nevertheless, has increased its libraries and their resources but an organized effort to mobilize them for sharing collectively, has yet to begin. The library school at the Karachi University did insinuate newer courses in its Master's curriculum in 1962. To begin with Documentation was started as a part of an elective course on Library Service in Science and Technology with the cooperation of the erstwhile Pakistan National Scientific and Technical Centre (PANSDOC) Karachi (now called Pakistan Scientific and Technological Information Centre, PASTIC, located in Islamabad). With the introduction of semester system in 1973 at the Karachi University, the Library School at that University increased its number of courses to 10 spreading over to 30 credit hours thereby making room for such optional courses as Information Storage and Retrieval, Data Processing and Libraries, Index and Indexing, and Library Automation, at Master's level. (The School has had trained teachers in these subjects). These courses were increased in 1983 to 12 courses of 36 credit hours and the foundation courses on Information Storage and Retrieval with cognate course, Information Networks & Data Banks and Systems were made compulsory. Later in 1985 a computer laboratory was established to support teaching of these courses. The School also produced with the help of the computer supplier to develop its own software for cataloguing and serial control, which prompted a local vendor to market a cataloguing software at a minimum cost of Rs.8,000/- as against much higher cost of such softwares then marketed by foreign vendors. By that time Computerized Documentation System/Integrated Set of Information Systems (CDS/ISIS)

was not developed by UNESCO for distribution, free of cost, for use in libraries all over the world.

These attempts at inclusion of information technology courses at Karachi Library School to begin with was regarded as an attempt towards modernization of the library science courses in Pakistan by the UNESCO Consultant, A.C. Foskett, who visited Pakistan in 1987. The University Grants Commission (UGC) had appointed a Curriculum Revision Committee in 1974 to standardize the country's library science syllabuses. The Commission's approved syllabus (1980) recommended the name 'Library and Information Science' for the discipline which sufficiently articulated information technology in the courses prescribed in the revised syllabus. The Karachi Library School adopted this syllabus with the changed name of the discipline to be effective from the academic session 1981-1982. The other schools followed suit later. The Peshawar Library School also established a computer laboratory later. So was the case with the Punjab Library School which also was equipped with such a laboratory after that of the Peshawar to support teaching their Information Science-based courses. The financial assistance in this case was provided by the Punjab Library Foundation.

The lack of academic-inbreeding of the Information Science subjects among the faculty in some of these schools was 'more of a danger-sign' to Foskett when he visited Pakistan in 1987. The UGC-British Council workshops, organized during 1984 to 1987 in a number of cities in Pakistan with the cooperation of the Loughborough University of Technology (U.K.) along with a rolling programme of hand-on-experience under the supervision of the Loughborough University in the United Kingdom. This programme—directed to provide an overview of contemporary developments in library and information provision to university librarians—trained 96 Pakistani librarians including 11 non-university librarians. On the basis of their performance—which required preparation of team-research project papers under the guidance of workshop tutor; presentation and discussion in class for finalization and submission in a written form for publication by UGC—16 university librarians were selected for a post-experience course at the Department of Information and Library Studies at Loughborough University of Technology for 2-3 months period. Two-third of this period was spent in course work at the Department followed by supervised work/observation placement in a number of selected libraries in the area. At the end of each course at home (Pakistan) this programme was critically evaluated both by the participants and tutors and based on these results the next programmes used to be revised. The project papers which were published by the UGC

included many useable guides for union catalogues, machine conversion of catalogue records and other resource sharing services.

This was the beginning of the workshops in Pakistan for removing the 'danger-gap' which Foskett had pointed out in his report later in 1987. Follow-up of the UGC-British Council workshops continued in later years. The impact of these developments had begun to show up when the Netherlands Library Development Project (NLDP)-Pakistan appeared on the scene; at a time when non-government organization (NGOs) were not facing the type of government control in providing assistance to libraries and other educational institutions as used to be the case in the past.

Above all, automation in libraries when discussed, first in the Pakistan Library Association (PLA) Conference held in Islamabad in 1979, in regard to National Information System (NATIS), the subject was slightly treated by many who took part in the discussion. Even some speakers at the 1990 Conference of the Punjab University Library Science Alumni Association (PULSAA), Lahore, to mark the Diamond Jubilee Celebration of its *alma mater*, expressed their displeasure at the teaching of information science at certain library schools in the country.

It was, however, on the heels of the post-1960s library developments that Pakistan was able to move ahead towards modernization in library services, beginning with the PANSDOC (now PASTIC)'s first attempt in 1970 to use data processing equipment for compilation of its 217-page *Union Catalogue of Scientific and Technical Periodicals Held in Pakistani Libraries* (Karachi, 1964; rev. 1970). It was again at this institution in 1977 that a pilot project was started to compile a computerized catalogue of 250 science books by author, title and series separately for each category. A list, NASLIST was brought out in June 1978 as a result of this project which was funded by the Govt. of Holland as part of its Book-Aid programme started in 1975 later enlarged to include all aspects of library services initially in 1988 to become NLDP-Pakistan later in 1991 with further widening of its scope.

Most important of the PASTIC publication is the *Union Catalogue of Scientific Periodicals of Rawalpindi-Islamabad* (Islamabad, 1987, 400 p.). Another database was created in Lahore by the Lahore University of Management Sciences (LUMS) by pooling together the business and economics libraries' resources in Lahore Business and Economics Libraries Network (LABELNET) for bibliographic access. Earlier to this, Akhtar H. Siddiqui, an illustrious bibliographer and documentalist established a computerized bibliographic system in the Pakistan Institute of Development Economics (PIDE) in 1979-1980, with the financial and technical assistance from the International Development Research Centre of Canada (IDRC).

Pakistan also serves as a focal point for the country in such specialized international networks, such as, the International Nuclear Information System (INIS) through PINSTECH Library, Rawalpindi; Agricultural Information System (AGRIS) through PARC, Islamabad; and, National Technical Information Services, Washington, D.C. through PASTIC.

These developments were fully or partially funded by the aid-giving agencies, such as the Asia Foundation, the British Council, Colombo Plan, UNESCO, USAID, etc. In this group the Holland Government also joined in the mid-1970s with its Book-Aid programme which later was known as NLDP-Pakistan. This programme when widened in its scope covered all aspects of library services. But the programme did not deem it necessary to carry forward, this enlarged programme from what had already been achieved in the country from the assistance provided by the earlier aid-giving agencies. They also did not consult those who were involved in these developments; nor look into the reports which were presented to the government in this regard. The project also did not involve governments or agencies controlling or influencing the development of libraries in the country, such as the UGC or the like. Many proposals for sharing library resources, etc. at research libraries level, under consideration of the UGC, such as the Pakistan Research Libraries Centre (PARLIC), appear to have been totally ignored by the project. Even the revision of the syllabus in 1991—with a composite course of Information Retrieval by addition of CD-ROM, etc. in it—was made by dropping a compulsory subject altogether. The project's efforts directed towards revision of the UGC's 1980 uniform syllabus also did not serve the purpose. Some schools were hesitant to adopt this syllabus because of reduction in number of courses.

The NLDP-Pakistan sought the assistance of the PLA for establishing computer training centres at its headquarters and zonal offices throughout Pakistan and for carrying out its various other resource sharing programmes. Sajjad ur Rehman was highly critical of this move. He says:

> A record development [1992] is the creation of a computer training centre at Lahore under the auspices of the .. [NLDP]. It may turn out as a befitting facility if permanent base is provided. The past record of the national professional association does not qualify it for such a role as the leadership during the last 15 years has always failed to pass on relevant records to the succeeding headquarters. There is little likelihood that a smooth transition for the control and management of computer centre will take place ... (*Challenges in Automating the Library Services*; ed. by Fida Mohammad, et al. Peshawar : Deptt. of Library and Information Science, 1993, p. 23).

Perhaps this may be the reason for the suspension of the training programme at the Karachi Centre run by the PLA zonal office there.

The continued assistance over more than two decades, provided by the NLDP-Pakistan, has, however, begun up to show up its impact despite its certain avoidable lapses which if avoided would have produced much better results than as at present. By 1996, the programme has established PLA-run computer training centres at all the federal/provincial capitals which have trained more than 600 librarians. A number of librarians also received training from Holland. Various libraries and all university-based library schools have been supplied with hard and CD-ROM copies of important library materials. Computer library training centres and university-based library schools have also been supplied with computers and other equipments.

E-mail facilities were made available at PLA offices and library school at Peshawar University. A number of libraries at Islamabad and some in Karachi, Lahore, Peshawar and Quetta were helped in retrospective conversion of their catalogue cards to automated records with the help of the PLA. The CDS/ISIS software developed by UNESCO for free distribution in the libraries of the developing countries was tailored to the needs of Pakistan by the NLDP-Pakistan, under the name of Library Automation and Management Programme (LAMP). An Urdu version was also produced and facility for local area network (LAN) was added in it. The first version of this programme is used by more than 75 libraries in the country.

These and other latest developments resulting from the NLDP-Pakistan have been discussed with useful details by the author, Khalid Mahmood in his first volume[1] of 14 research articles, who himself had received training under the project and has now successfully undertaken to impart instruction on automation and, more importantly, on the project's various automation programmes including LAMP.

Published during 1993-97, nine of these articles were published in foreign journals, *INFOISIS*, published from Argentina, *Information Development*, *International Information and Library Review*, and *Library Review*, published from the U.K.; *International Cataloguing and Bibliographic Control*, published from Germany; and, *Library Software Review*, published from the U.S.A. The rest of the five articles were published from Pakistan in *Pakistan Library Bulletin*, *PLA Journal*, and, *Pakistani Librarian*. All of them are in English. Two of them were published in 1993 and one each in 1995, 1996 and 1997.

Of these one article, "Cataloguing Practice in University Libraries: A Comparison of Three Developing Countries (Pakistan, Malaysia and Saudi

[1] This volume was processed in Nov. 1997 in which the above articles are included.

Arabia)", *Lib. Rev.*: 46 (no.5, 1997) is the only article which was written in collaboration with Hafiz Muhammad Khalid. This is also the only article which compares Pakistan cataloguing practice with two other Muslim developing countries of Asia. This article along with three other articles, "Subject Cataloguing in Pakistani Libraries", *Int. Cataloguing and Bibliographic Control* 26 (July/Sept. 1997); "On-line Public Library Access Catalogue (OPAC) at Department of Library Science [Punjab University]", *Pakistani Librarian* (no.3, 1997), published from Lahore; and "Emerging Trends in Technical Services in Pakistan", *Information Development*, 13 (June 1997) also deal with the subject of cataloguing although partly in some cases, the article on 'OPAC' is a completely on automated catalogue access—which is the major theme of Khalid Mahmood's writings.

The rest of the articles barring "Let's Save Our Cultural Heritage" *PLAJ* 14 (Jan.-May 1993) treat the subject of library automation. Even those articles which do not concern automation have some references to the subject of automation. The article on 'OPAC', as mentioned above, is completely on the subject of computerized catalogue. The article on "Library and Information Services ...", making a survey of papers published during 1947-95 on Pakistan in foreign journals, include such articles that were first published on this subject in 1987 and 1989. Both these articles, however, were written by foreigners. Those written by Pakistan librarians were published in 1991 and 1994 (2 in 1991 and one in 1994 by Attaullah, *et al.*) and one in 1995 by Khalid Mahmood which is produced in this book.

Besides these, the author has written one more article in 1996, in *PLAJ* from Islamabad, which deals with PLA Computer Training Centres. Still one more article is contributed by him in 1997 on a review of library literature published from Pakistan during 1990s. This article is published in the *World Libraries* from USA. These two articles are not included in vol.1. Thus the total number goes up to 16 for Khalid Mahmood's articles until 1997. For a meaningful comparative evaluation, Khalid's writings in English language until the year 1997 have been taken into account here. Urdu articles have not been considered and those articles published more than once have been treated as one article.

Duly documented and illustrated these articles provide necessary details, even cost of software, which help not only in understanding the subject of library automation but also ascertaining the cost-effectiveness of various softwares. They are readable and present a complete overview of the present status of use of both hardware and software in the country.

It is worthwhile to note that the author himself represents the third generation of library leadership in our country and that they have dedicated

themselves to promote the cause of library automation in Pakistan so that our country could enter the ensuing 21st century with the augmented facility of access to the resources and services of our libraries thereby enabling scientists and researchers, *insha-Allah*, to get their needed information quicker and faster and at the right time for completing their research.

These writings are a valuable addition to our literature. They will serve as a useful guide to help providing computer-assisted library and information services in Pakistan. The author's first article was published in the *Pakistan Library Bulletin* in 1993 ("Let's Save Our Cultural Heritage"). The same year another article "Micro-CDS/ISIS..." was published in the *Pakistan Library Bulletin* again. The 1994 was a blank year for the author. But in 1995 he had two published articles to his credit. And in 1996 he almost broke in print with 6 articles each in 1996 and 1997, with an overall average to more than three articles (3.2) between first five years (1993-97) of the author's career and 4 articles each in four years (1993, 1995-97) of his writings. This is the record-breaking beginning of Khalid Mahmood in his early career. Although there are a few others who have even exceeded the above average in some years with the inclusion of their part publications, such as encyclopaedia articles and seminar/conference papers – which are, however, not forthcoming in the case of Khalid Mahmood – but the longer span of other writers has reduced their overall respective average to less than that of the author under reference. I, therefore, salute this budding author for this achievement.

All in all, the present writings of Khalid Mahmood are useful and will serve as a valuable source material for all and sundry in the profession. The learned author thus deserves our gratitude for this valuable addition to the literature.

The Status of Library Automation in Pakistan*

Because of its outstanding efficiency, performance and ability to handle large volumes of documents, the computer is gaining popularity in the field of librarianship and information services. Many library and information routines are being performed proficiently by computers. The computer has proved its success in the fields of library acquisition, cataloguing, classification, circulation, serials control, and information storage and retrieval activities. Many new services like SDI and current contents service have been initiated with the help of the computer.

Library automation has become a burning issue, with pros and cons, among librarians throughout the world. We cannot mention present library literature or any conference without a reference to library automation.

The history of library automation is not a long one. It dates back to the 1950s and 1960s in America and Europe. In Pakistan, library automation was introduced in the 1980s and a number of libraries were computerized during or after 1987. The library literature in Pakistan does not provide much information about the current status of library automation in the country, although a few articles have been published. In this regard, our alumni Mumtaz Ali Anwar, Sajjad ur Rehman and Abdus Sattar have presented an introduction and basic guidelines for librarians wishing to automate their libraries, with special reference to Pakistan [1-3]. Bushra Riaz, in her article, has discussed the problems faced by library automation in the country [4]. In addition, other librarians have narrated their personal experiences in their individual libraries in different issues of he PULSAA and PLA newsletters.

Library automation has multifarious aspects to be discussed but this study is limited to the status of library software and library automation training in Pakistan.

LIBRARY SOFTWARE

What is software? Basically, software is the program that runs the computer to produce the required results. It is, in fact, the most important component of the automation process. Someone said, "A computer without software is similar to a man without his brain, or a library with neither books nor librarians." Therefore, on principle, the selection of software comes

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* Source: "The Status of Library Automation in Pakistan." *Library Review*, vol. 45, no. 6 (1996): 36-42.

before hardware. When we talk about library software, we mean the software needed for library housekeeping routines and information retrieval services.

Hundreds of library packages have been developed and run successfully in advanced countries and there are many directories and other tools available that help librarians to select suitable software for their libraries. But the situation in Pakistan is disappointing. Very few attempts have been made in the country. The question is, what are the hurdles and obstacles to a progressive situation and how can these hurdles be removed? It is an accepted fact that we are an under-developed nation without necessary resources. With meager budgets, our libraries cannot afford the cost of library automation as whole. With only 26 per cent literacy, there is a lack of institutions for research and, because of our poor education system, students and teachers do not consider the library a necessity. Our librarians are not trained in library automation as library schools in our country do not prepare their students for this challenge. Some schools have included the subject of library automation in their syllabi but there is no facility for practical knowledge of computerization. Because of computer illiteracy, librarians hesitate to automate their libraries and, if they have to do so, they cannot play an active role in the automation process. People do not appreciate the requisites of library automation like system analysis, consultancy, staff training and equipment maintenance. Another problem is the growing trend of software piracy in the country. No software developed abroad is suitable for our libraries. Libraries that have been automated in the country have worked individually without having the benefit of the others' experiences. As standard library software is non-existent in Pakistan, library co-operation, which is one of the remarkable achievements of automation, is becoming extinct with the passage of time.

Pakistani libraries mostly use microcomputer. So, it will be useful to introduce briefly some database management systems for microcomputers being used in the country.

dBase

A number of libraries in Pakistan have developed their in-house library databases using dBase: dBase III+ (introduced in 1985) and dBase IV (released in 1989) are mostly being used. It provides an opportunity for relational databases, utilizes less free memory, offers keyboard macros and password protection and can be run on local area network [5]. As dBase is a standard database management system and is not meant especially for libraries, one cannot develop an application without proper understanding and training. The fixed length field is also a problem for the textual retrieval

most libraries need [6]. Version 1.5 of dBase IV (released in 1992) costs about $800.

FoxPro

Following dBase, FoxPro is making inroads in Pakistani libraries. It is an application development dBase-compatible relational database package. It offers more facilities than dBase and is characterized by quick performance. Application basics are very easy to acquire, but more complex development requires a great deal of time to learn. Version 2.0 (released in 1991) costs about $800 [5, pp.166-7].

INMAGIC

INMAGIC is used successfully in Lahore University of Management Sciences (LUMS), NWFP Agricultural University, Peshawar and some other agricultural libraries in the country. The software was originally developed for minicomputers in 1980. Since 1983 it has been available for use with IBM PC and compatible machines.

The package is powerful, flexible and relatively easy to use. Data are stored in variable length fields and each field may be repeated, which fulfils requirements for multiple authors, subjects, etc. in a bibliographic database. Fields may be indexed by keywords, term or both for quicker and easier retrieval.

Boolean operators (and, or, not) may be used to broaden or narrow the search. Comparison operators (greater than, lesser than, equal to) may be used in term searches. Searches may be stored and later recalled or modified. INMAGIC offers output of search results on screen, to the printer or to an ASCII file on disk. Field-wise sorting and subsorting are available.

It can design a database of up to 75 fields, of which 50 fields can be indexed. Its manual is clearly written, contains many examples and is well indexed. On-line tutorial is also available [7-8]. Field, record, and database size in INMAGIC are unlimited. A first copy of version 8.0 of INMAGIC PLUS (released in 1992) costs about $1,250 [5, pp.167-8]. This software is very suitable for Pakistani libraries but it is expensive and our libraries may not be able to afford it.

CDS/ISIS

A number of libraries in Pakistan are working on CDS/ISIS. The range of ISIS users includes all types of libraries. ISIS was developed by UNESCO and is being distributed free of charge. More than 5,000 libraries are licensed

users worldwide. It is a non-numeric database specially designed for bibliographic records, and is multilingual. A database can hold 16 million records. It provides variable length fields, repeatable fields, and sub-fields. It has powerful indexing and searching techniques. It provides a stopword file. Advanced programming can be done in the PASCAL language. Data can be exchanged according to international standard ISO 2709. It can be run on local area networks. Well elaborated documentation is available. Its latest version 3.07 was released in December 1993. Although CDS\ISIS cannot perform all housekeeping operations easily, its use is rapidly increasing in the country. Various journals published regular columns on the development in CDS\ISIS. Five Pakistan Library Association computer training centres offer regular courses on CDS\ISIS and hundreds of librarians have become trained users [9].

MINISIS

MINISIS can presently be used only on minicomputers but following the release of its PC-based microcomputer version, which was expected in November 1994, it will be able to satisfy all automation demands of our libraries. MINISIS, distributed by the International Development research Centre, Canada, is currently being used in about 350 institutions in the world; the PC version of MINISIS, named version II, will be issued in English, French, Spanish, Chinese and Arabic languages. The integrated library system developed by MINISIS will include library accounting, acquisitions, cataloguing, online public access catalogue (OPAC), circulation, serials control and interlibrary loan. MARC will be followed in cataloguing [10,11].

Now some information about some library applications developed in Pakistan.

KITABDAR

Developed by Silicon Systems Ltd. Kitabdar is currently being used in five libraries in Lahore. Based on PASCAL, it is the first Urdu library software in Pakistan. It is specially designed for research and reference libraries. It can mix both Urdu and English in the same text field. Sorting is fast. It provides both speedy and complete search on 28 different fields. Though not based on any standard format, it is good for cataloguing. Acquisition and circulation functions are not properly designed. Its LAN version is also available [12].

Pak Library Software

Pak Book Corporation developed a package for medium-sized libraries. Using Foxbase version 2.0 the software was issued in 1992. The following functions were included in the package [13]:

- make searches on books from different angles;
- issue/receipt of books to/from members;
- issue reminders to members;
- make entries for new books;
- enlist new members;
- give the status of a book;
- give the individual records of members;
- reserve a particular book for a member;
- keep a record of periodicals;

Pak Library Software was not accepted by the librarians, so it has been discontinued.

LAMP

The Library automation and Management Program has been developed by The Netherlands Library Development Project-Pakistan (NLDP-P), with the collaboration of the Pakistan Library Association (PLA). It has been designed specially for Pakistani libraries. LAMP was developed entirely in CDS\ISIS with the help of PASCAL. It can handle the following library housekeeping routines [14]:

- *Acquisition:* budget control, ordering routines, payments record.
- *Cataloguing:* bibliographic information, printing cards, printing bibliographies, searching through various keys.
- *Circulation:* borrowers' records, check-in and check-out of items, reservations, fines calculation, SDI.
- *Serials control:* acquisition and cataloguing of serials, holding list.
- *Authority files:* publishers, subjects and name authorities for both serials and monographs.
- *Management reports:* statistical reports for acquisition, cataloguing and circulation.
- *Utilities:* data exchange, spell check, duplication check.

The first version of LAMP is currently being used in more than 25 libraries in the country including six legislative libraries of the Senate and national and provincial assemblies. After receiving feedback from library professional, development of LAMP version 2 has been started.

LIBRARY AUTOMATION TRAINING IN PAKISTAN

The most important people in making library computerization successful are librarians. They know their job well and should be most qualified to decide which function should or should not be computerized. It must be realized that librarians will not be able to make any use of computer equipment until they are provided with the know-how required to use it. So, before providing the equipment, it is necessary to make training arrangements for the professional development of librarians.

In the first two or three years of library automation in Pakistan, a few librarians have been able to develop an acquaintance with the computer either through training abroad or by working with foreign consultants. Self-education was another method used by a small minority.

Library Schools

There are six library schools in Pakistan which offer postgraduate courses on library and information science on a regular basis. It is their duty to keep their syllabi up to date with changing concepts in the profession. With regard to library automation training, the condition of library schools in the country is disappointing. The University Grants Commission (UGC) presented a revised curriculum in 1991 but unfortunately no library school implemented it. Another problem is that there are not adequate hardware facilities for training the students. The school at Karachi was first to have a computer, followed by the school at Peshawar. Punjab University succeeded in having the maximum number of four computers [15]. NLDP also donated one computer to each library school last year, but the existing facility is still insufficient. Now the BCCInfaq, an NGO, has offered the six library schools a complete computer lab with 11 IBM PCs and other accessories. Following this achievement, we hope for a healthier situation in library schools.

Professional Associations

With the emergence of library automation in the country, professional library associations showed an immediate response and took it as a challenge. After its revival, PULSAA arranged the first short course on the use of microcomputers in libraries in August 1989. The participants evaluated the course as excellent. PULSAA also arranged two other courses in 1990 and 1993 in which training on CDS/ISIS was emphasized.

The PLA (Headquarters) arranged a ten-day workshop on "Computer introduction, application and data management in libraries" in October 1991 at Lahore.

Librarians at Multan have also conducted a course with the sponsorship of NLDP. Fifteen librarians were trained in DOS and Wordperfect.

PLA Computer Training Centres

With the help of NLDP, the Pakistan Library Association has established five permanent computer training centres at Islamabad, Lahore, Karachi, Peshawar and Quetta. The cases for Hyderabad and Bahawalpur are under consideration. The first PLA centre started functioning in November 1992 at Lahore. By the end of June 1994, PLA centres in the country had trained 500 librarians and other people in library automation [16]. The courses include "Fundamentals of computers", "Disk operating system (DOS)", "Wordprocessing using MS Word and Wordperfect", "Spreadsheet using Lotus and Quatro Pro", "Database management using dBase", and "Library automation using CDS/ISIS and LAMP" [17]. A special one-month course was also designed with the help USIS at all the centres. The course was conducted by Dr. Nelson, a library automation expert from the USA. At Lahore, to make students well-versed in a working automated environment, visits to automated libraries in the city have also been made an integral part of the courses.

CONCLUSION

In conclusion, it might be stated that library automation is in its infancy in Pakistan. No serious efforts have been made in the field of library software in a proper manner. With only six or seven years' experience in library automation, very few people have been trained well in library computerization. There is a lack of resourceful persons in the country. It is the duty of our professional associations and library schools to solve the problems of library software and its appropriate training in the country. PLA computer centres must play an important role in the selection and development of suitable library software for our local needs. A MARC format for Pakistan should be developed. None of this can be done without the help of government. The Government should aid libraries and supervise their struggle for library automation.

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Promoting Information Technology in Pakistan: the Netherlands Library Development Project*

INTRODUCTION

International agencies played a very important role in the history of the library and information profession in Pakistan. For many years, libraries and information centres received assistance in the form of funds, books, equipment and advisory services from various external organizations, most notably the United Nations, UNESCO, the World Health Organization (WHO), the United Nations Food and Agriculture Organization (FAO), the International Atomic Energy Agency and the Colombo Plan. Similarly, the Ford Foundation, the British Council, the Asia Foundation, the United States Educational Foundation, the United States Information Service (USIS), the United States Agency for International Development (USAID), the Library of Congress and the library associations of England and Australia have extended their cooperation and assistance for the development of library and information services in the country in one way or another.

In 1975, the Netherlands Government initiated the Netherlands Scientific Literature Project (NSLP) with the aim of providing scientific literature support to university libraries in Pakistan. From 1975 to 1990, some NLG 3.5 million of the Dutch bilateral allocation for Pakistan was committed to this project. In 1988, the director of International Consultancies SOCRATES, Dr. C.A. Ravenswaaij, was assigned to carry out an evaluation of the project. He recommended a revised approach which was approved by both Dutch and Pakistani authorities. Prior to 1988, the project was limited to 'book aid', and covered, in principle, any institutions showing interest in receiving books. After the evaluation, the project was widened to encompass the much broader area of library development, which included also a training component, advisory services and the purchase of library equipment and computer hardware and software. Phase 1 of the revised project covered the period from 1988 till May 1991.

The concept and strategy of the project were again reviewed in June 1991, and the scope was widened from supporting individual libraries to implementing collective activities at the national level. The name of the project was also changed from 'Netherlands Scientific Literature Project' to

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* Source: "Promoting Information Technology in Pakistan: the Netherlands Library Development Project." *Information Development*, vol. 12, no. 2 (June 1996): 96-100.

'Netherlands Library Development Project (NLDP)'. Phase 2 of the project covered the period from June 1991 to May 1994.

After an external evaluation of the project in June 1993, the Netherlands Government decided to extend it until August 1995. A further extension of one year was requested in order to ensure sustainability of the activities initiated under the project. This was approved, and now the project will officially end in September 1996. The extension period will focus on the marketing of information products and services offered by the Pakistan Library Association.

The aims of NLDP are to develop, support and improve information services in Pakistan. It provides managerial, technical and financial assistance in the information field for developing human resources through training; formulating national policies and plans; and introducing information networks. Other objectives include:

- computerization and automation of libraries
- introduction of short, medium and long term techniques for library planning and management
- development of library manuals
- networking
- organizing in-service training for librarians in Pakistan and abroad
- activating involvement of librarians.

The basic function of the project is to introduce new information technology in Pakistani institutions and to train manpower accordingly. The activities and achievements of the project are outlined below.

HUMAN RESOURCE DEVELOPMENT

Training of librarians and information specialists has always been the highest priority area of the project and special attention was paid to it. The NLDP helped the Pakistan Library Association (PLA) in establishing computer training centres at the federal and four provincial headquarters of the country. These centres aim to provide:

- training to working librarians
- training to students of library and information science
- a place for practice
- the necessary infrastructure for library automation projects of the PLA.

The first centre started functioning in November 1992 at Lahore. Each centre was equipped with eleven IBM-compatible 386 personal computers,

four dot matrix printers, an overhead projector and a crystal display unit. By the end of 1995, more than 600 professionals had been trained at these centres. The courses provided include: Fundamentals of Computers; Disk Operating System (DOS); Wordprocessing, using MS-WORD and Word-Perfect; Spreadsheet Management, using Lotus-123 and Quatro Pro; Database Management, using dBase and Foxpro; and Library Automation, using CDS/ISIS and the Library Automation and Management Program (LAMP). After the establishment of the Centres, the NLDP continued its financial support in the form of instructors' salaries, equipment repair, etc.

For training purposes, library and information science experts from abroad have also been invited to Pakistan with the sponsorship of the NLDP. Dr. Sajjad-ur-Rehman and Mr. Shaheen Majeed from the International Islamic University in Malaysia were the resource persons in a one-week workshop on library automation held at Islamabad. With the sponsorship of USIS, NLDP and the PLA, Dr. David N. Nelson from Texas A&M University made a four-month visit to Pakistan, during which he conducted courses on USMARC in five different cities in the country. With co-sponsorship by Asian Partners in Training, Ms. Cheryl Anne Grant from the State Library of New South Wales, Australia, conducted a two-week course in Islamabad. UNESCO provided a grant for a visit by Mr. Eddie Kips of The Hague Library School for developing training material on CDS/ISIS and for exploring the possibility of introducing e-mail facilities in Pakistani library and information schools. The NLDP arranged for him to visit five library schools in the country, where he delivered lectures on CDS/ISIS and e-mail. Lectures by Professor John Feather from Loughborough University of Technology, United Kingdom, were arranged in Islamabad and Lahore.

The NLDP also arranged foreign training for Pakistani professionals. Two courses in the Netherlands, one of four months, and the other of six weeks, duration were attended by twelve librarians and library science teachers from Pakistan. The use of new information technology in libraries was one of the major elements of these courses. The NLDP also sponsored a study tour to the Netherlands by eight Pakistani librarians. To get firsthand knowledge of library automation, the participants visited scientific libraries, library schools and library associations in the Netherlands, as well as the Centre for Library Automation (PICA).

To introduce new concepts in library and information services, the NLDP sponsored a number of workshops, seminars and conferences. Training courses on library automation were conducted in nine major cities of Pakistan. The NLDP also nominated two library professionals to attend a course on Management Information Systems (MIS) held at the Pakistan

Institute of Management. The project sponsored a seminar on 'The Status of Library Automation in Pakistan', which was arranged by the Pakistan Library Association in Lahore. In collaboration with USIS, a seminar on Library Automation Planning' was also conducted in Lahore, while the project also collaborated with UNESCO and the National Library of Pakistan on a one-week course on 'Database Management and Networking.' A two-day workshop on 'Managing the Information Revolution' and a series of lectures on 'Library Automation' were conducted in Peshawar. The 15th PLA Conference, held in December 1994 at Lahore, was attended by more than 700 professionals. The theme of the conference was 'Information Technology in Pakistan: potentials and prospects.' About twenty papers were presented at the conference.

The NLDP has convinced the Pakistan Ministry of Science and Technology to provide scholarships to information specialists. The Ministry has agreed in principle to send library professionals for Masters and Ph.D. programmes in future.

EQUIPMENT SUPPLY TO LIBRARIES

To encourage the use of new technology it was necessary to provide equipment to some model institutions. The NLDP provided support to individual institutions and supplied fourteen photocopiers and more than twenty computers. Some institutions were also provided with hard disks and backup cartridges. The beneficiaries, located in ten cities around the country, included seven university libraries, seven college libraries, five public libraries, four special libraries, six library schools, the PLA headquarters and five PLA branches.

CD-ROM drives with Sound Blaster were provided to the PLA Computer Training Centres and library schools, while email facilities were provided to the PLA headquarters and branch offices and to the library school of Peshawar University.

A set of books on DOS, dBase, Lotus-123, CDS/ISIS, e-mail, OCLC and the Internet was provided to the institutions where computers had already been supplied by the NLDP. CD-ROM copies of the Dewey Decimal Classification were supplied to six library schools, and a CD-ROM copy of the Library of Congress List of Subject Headings was provided to the library school at Lahore.

The project proposed to the Federal Government that it should provide fifty computers to selected libraries in the country. This has been agreed in principle by the Ministry of Education.

INFORMATION NETWORKS

Information networking is vital for national development, but there is no culture of resource sharing in Pakistani libraries and information centres. Most institutions operate in isolation, and most government reports and studies are not accessible even to government institutions and departments. Under these conditions it is very difficult to develop an information network. There is a need to persuade the policy makers to develop databases of related literature. The best way would be to computerize the most important libraries.

The NLDP has made efforts to develop information networks in the major development sectors. Base work has been done, and feasibility studies for a number of networks have been completed. Practical work on some projects has also been started. A national union catalogue will be compiled under a project for a National Network for Books and Government Reports. It has also been suggested that all the major libraries should be linked together electronically through a wide area network. OCLC is willing to assist Pakistan in developing an online information system.

At present, due to the shortage of funds, the majority of Pakistani libraries are not in a position to purchase even the barest essential number of periodicals from their own budgets. The number of periodicals, and their costs, are expected to increase every year. Hence there is a great need to share resources among libraries. For this purpose a Serials Network (SERNET) project has been proposed by the NLDP. A SERNET database has been developed containing information on the contents of 1500 periodical titles. Institutions in the federal and four provincial headquarters have been included in the network, and the database has been distributed to fifty libraries on floppy disk. A CD-ROM version will also be developed and distributed. When a national union catalogue of books and serials is functioning, interlibrary loan will be easy. For this purpose, an Inter Library Document Delivery System has been suggested by the NLDP. Through this system, books and articles will be available for researchers throughout the country. To make the system successful, the e-mail facilities at PLA branch offices will be used. Full text CD-ROM databases are also recommended to provide document delivery services. It is proposed to start a coupon system for the payment of photocopying service charges.

Another network, WIDNET, will cover the governmental and non-governmental organizations working in the field of women and development. The proposed services include a new accessions list, current awareness service (CAS), document delivery, selective dissemination of information (SDI), and reference service. An Environment Information Network will

organize the information resources of institutions working on the environment. A bibliographic database of materials on the environment will be set up.

As Karachi is the hub of the banking sector in Pakistan, a network to be known as BANKNET has been proposed for Karachi. Organizations involved in education will be also be networked through an Education Information Network. The University Grants Commission has shown interest in developing such a network. About 210 organizations are involved in the science and technology field in Pakistan. For information dissemination among these institutions a Science and Technology Information Network has been proposed by the NLDP. The Chairman of the Science Foundation showed keen interest in this proposal. A Forestry Information Network has been developed for institutions involved in forestry. As a first step, the library of the Pakistan Forest Institute at Peshawar has been computerized and a database of about 25,000 books and 28,000 journal articles has been developed for distribution to other forestry libraries. Health service institutions will be networked through HEALTHNET. The National Institute of Health, Islamabad has agreed to become the focal point for this network.

SOFTWARE DEVELOPMENT

At the time when NLDP started its operation the automation condition of Pakistani libraries was pitiful. There was no national format for library automation. More importantly, there was no integrated library software available in the market. Libraries were not able to procure costly foreign library software packages, and imported packages were not compatible with the needs of Pakistani libraries. Mostly, libraries developed small applications in dBase and Foxpro in isolation. In these circumstances, the Netherlands Library Development Project took the initiative to develop a library software which can fulfil the needs of Pakistani libraries.

After discussion with senior library professionals, an integrated library software, Library Automation and Management Program (LAMP), has been developed. A team of two computer programmers and a number of professional librarians was involved in the development of the software. Advanced programming in PASCAL language was incorporated in six databases created in CDS/ISIS. It is a completely menu-driven, user friendly package. A well-elaborated user manual of about 250 pages has also been published.

LAMP can handle almost all the housekeeping routines being done in any public, academic or special library in Pakistan. The module for acquisition of monographs includes budget control, ordering routines and

payment records. Bibliographic information can be entered in the cataloguing module, which can print catalogue cards, bibliographies and shelf lists and search for any information through various keys. The circulation module can maintain borrowers' records and issue, return, renew, and reserve books. It calculates fines for overdue books and also prints overdue notices. SDI service can also be provided to the users having specific interests. The serials module can handle the acquisition and cataloguing of serials and holding lists of serials can also be printed. Subject, author, and publisher authorities can be maintained in LAMP.

The first version of LAMP is currently being used in more than twenty-five libraries. Some of them are using LAMP on a local area network (LAN) very successfully. The software has also been distributed for comments to twenty-five other libraries in Pakistan and to sixty international institutions throughout the globe. An Urdu version of LAMP has also been prepared. After receiving the feedback from the library professionals, the development of LAMP version 2.0 has been started. This version will be more compatible with the MARC format.

RETROSPECTIVE CONVERSION AND DATABASE DEVELOPMENT

Retrospective data conversion is a main hindrance in automating a library catalogue. With the help of the PLA, NLDP started to offer its services for this purpose. The libraries of the following fourteen institutions have been automated by the PLA:

- Swiss Development Cooperation, Islamabad
- Sustainable Development Policy Institute, Islamabad
- Senate of Pakistan, Islamabad
- National Assembly of Pakistan, Islamabad
- Pakistan Investment Board, Islamabad
- Pakistan Institute of Development Economics (PIDE), Islamabad
- Pakistan Institute of Medical Sciences (PIMS), Islamabad
- Quaid-e-Azam University, Islamabad
- Planning and Development Division (PDD), Islamabad
- Punjab Legislative Assembly, Lahore
- Baluchistan Legislative Assembly, Quetta
- Legislative Assembly, Peshawar
- Pakistan Forest Institute, Peshawar
- Sind Legislative Assembly, Karachi

These projects provided three useful outcomes. The first benefit is that the librarians were provided with on-the-job training on library automation and management. The second is that it generated income for the Library Association. The third is that it developed teamwork and cooperation, which is essential for information networking. The projects have been instrumental in the formation of library automation teams in the country.

The NLDP has also initiated the process of developing a national database. More than 200,000 bibliographic records of the libraries which have already been computerized using LAMP were included in the first national database. A CD-ROM version of the database has also been produced. The following benefits are expected from this CD-ROM:

- resource sharing among libraries becomes possible
- users can search the other libraries' catalogues from their own institutions
- assistance in research work
- help in dissemination of research efforts
- reducing searching time
- assistance in cataloguing
- development of a union catalogue.

LIBRARYAUTOMATION GROUP (LAG)

To discuss the library automation problems of Pakistan, a Library Automation Group (LAG) has been established in Islamabad. The objectives of the group are:

- to provide technical and professional advice to libraries in their automation programmes
- to advise or recommend computer training programmes for librarians so as to help them to automate their libraries
- to develop library automation projects
- to coordinate library automation activities in the country
- to coordinate library automation activities with international organizations
- to provide information and conduct research and studies on library automation.

A number of meetings have been conducted so far. A quarterly newsletter, *LAG News* has also been started. The Group's main activities have included a comparative study of Micro CDS/ISIS and INMAGIC software for libraries. A detailed report of this study was prepared and

published in the newsletter. The LAG recommended CDS/ISIS as the best library software in the Pakistani situation.

Another area of study by the LAG was CD-ROM technology in Pakistan. A list of existing CD-ROM titles in Pakistani libraries and documentation centres was compiled. A book on library automation in Pakistan is planned to be published by the LAG. The Group also plans to compile a national union catalogue and to provide advisory services to libraries for automation.

CURRICULUM DEVELOPMENT

At present the six library schools in Pakistan have different curricula. The syllabus is also outdated and does not cover any new information technology. A committee was formed to revise the current curriculum to include today's library needs. Mr. Mir Hassan Jamali from the University of Baluchistan was made the coordinator of the committee. After several meetings attended by the heads of all library schools, working librarians and representatives of the University Grants Commission, a new curriculum was finalized. The revised curriculum has been sent to the departments of library and information science for implementation.

The new curriculum contains for the first time all contemporary information technology components in different courses. Besides other, more traditional, topics, the curriculum includes:

- fundamentals of computerized information storage, retrieval and dissemination
- introduction to computer hardware and software
- telecommunications
- CD-ROM (technology and databases)
- networking (LAN and WAN)
- electronic mail, bulletin boards and Internet
- machine-readable databases
- use of microcomputers in libraries
- database design and maintenance
- MARC, UNIMARC, ISBD, CCF
- management information systems (MIS)
- automated serials management
- marketing of information products and services.

CONCLUSION

In a society where education is a low priority area, where very little funds are allocated for this purpose, and where library development seems to be the most neglected area, the NLDP has really been a blessing. The opportunities provided by the NLDP for the promotion of librarianship in Pakistan are matchless. The project's major activities have been in the area of the introduction of information technology. The project has almost completely changed the thinking of Pakistani librarians and information professionals in this respect. There was a time when our librarians were scared of the computer technology. They used to mention its application in libraries only vaguely. But now everyone, from a fresh graduate entering a library school to a near-to-be-retired professional, is exposed to the new technology. The NLDP made great efforts in the fields of manpower training, hardware supply, software development, information networks, and curriculum development. The project provided a platform for the further development of information activities in Pakistan, and initiated a number of projects which have been highly appreciated by the professionals all over the country. It is suggested that, for the sustainability of these projects, the NLDP should continue for at least five more years. It is also recommended that library associations in Pakistan should contact other international donor agencies and make them ready to sponsor information technology activities in Pakistan.

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Library Software in Pakistan*

The application of computers in libraries has not yet become as common in Pakistan as in other countries. But there is every reason to expect that computers will be increasingly used in Pakistani libraries during the next few years. The necessity and the possibilities of using new information technology for national development have already been realized by the government and other policy-makers in the country. With the advent of more powerful microcomputer technology, the substantial lowering of prices, financial assistance from foreign and local funding agencies and increased training facilities for librarians, more and more libraries in both the academic and the special sectors have initiated actions towards computer application.

LIBRARY SOFTWARE

The computerization of any library operation involves three basic factors: the hardware, the software, and the 'peopleware'. These are not independent factors; they all have to be compatible with each other.

Software is the most important item in the automation process. A computer without software is similar to a man without a brain, or a library with neither books nor librarians. In principle, therefore, the selection of software comes before that of hardware. For the librarian, the selection of general purpose software, such as word-processors, data managers, spreadsheets and graphic packages, is not much of a problem compared to the selection of application software specially designed for libraries. When we talk about library software, we mean the software needed for library housekeeping routines such as acquisition, cataloguing, classification, circulation, serials control and other information storage and retrieval services.

In the selection of special purpose library software, there are three options open to the librarian:

- to acquire a ready-made software package
- to have the software package developed to order by a software house as a turnkey project
- to have the software developed in-house by himself or his staff.

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* Source: "Library Software in Pakistan." *Information Development*, vol. 11, no. 3 (September 1995): 165-167.

Each of these options has merits and demerits. Commercially available packages are often designed by people who do not have an adequate library and information background. They often lack standardization in cataloguing, which is of primary importance to ensure compatibility with other information systems. In this respect, software packages developed by library and information personnel with adequate institutional support can have definite advantages over the commercial packages. However, local software development by professional software personnel on a contract basis, or by the librarian or his staff, has several disadvantages. Librarians are generally not good programmers. Moreover, libraries need to have the required personnel, money and above all, time to experiment on such projects until their successful completion in terms of fault-free application with the desired efficiency and economy.

SOFTWARE DEVELOPMENT PROBLEMS IN PAKISTAN

Hundreds of library software packages have been developed and run successfully in the advanced countries and there are many directories and other tools available to help librarians to select suitable software for their libraries. In Pakistan, by contrast, the scene is not so pleasant. Very few attempts at library automation have been made in the country. The few libraries in the country that have been automated have worked individually without benefiting from each other's experiences. The question is, what are the hurdles and obstacles in the way of progress and how can they be removed?

It is a fact that Pakistan is an underdeveloped nation lacking many resources. With meager budgets, Pakistan's libraries cannot afford the cost of library automation. With only 26 percent literacy, there is a lack of institutions for research, and due to the poor educational system, students and teachers do not feel the library to be a necessity.

Pakistani librarians are not trained in library automation; the country's library schools do not prepare their students for this challenge. Some schools have included the subject of library automation in the syllabus, but lack the facilities to provide practical experience of computerization. Due to computer illiteracy, librarians hesitate to automate their libraries and if they must do so, they are unable to play an active role in the automation process. Little attention is paid to the basic requisites of library automation like system analysis, consultancy, staff training and equipment maintenance. Another problem is the growing trend of software piracy in the country.

No software developed abroad is suitable for Pakistan's libraries. Due to the lack of standard library software in Pakistan, library cooperation, which

can be greatly facilitated by automation, is becoming extinct with the passage of time.

FOREIGN SOFTWARE IN PAKISTANI LIBRARIES

Those Pakistani libraries which are automated are mostly using microcomputers and well-known foreign software packages.

A number of libraries in Pakistan have developed their in-house library databases using dBase. The dBase III+ (introduced in 1985) and dBase IV (released in 1989) packages are mostly being used. They provide the possibility of creating relational databases which can be run on a local area network. As dBase is a standard database management system not specially meant for libraries, one cannot develop an application without proper understanding and training in the package. One drawback to using dBase for libraries is its fixed length fields, which create problems for the textual retrieval which most libraries need.

The Foxpro package is also taking root in Pakistani libraries. This is a dBase-compatible relational database package which has more facilities than dBase. It is characterized by quick performance. The application basics are very easy to acquire, but more complex development requires a great deal of time to learn.

The INMAGIC package is successfully used in the Lahore University of Management Sciences (LUMS), the North West Frontier Province Agricultural University, Peshawar and some other agricultural libraries in the country. This software was originally developed for minicomputers in 1980. Since 1983 it has been available for use with IBM PC and compatible machines. It is powerful, flexible and relatively easy to use. Data are stored in variable length fields and each field may be repeated, which fulfils the requirements for multiple authors, subjects, etc. in a bibliographic database. INMAGIC has good indexing and searching facilities, and searches may be stored and later recalled or modified. Search results may be output to screen, printer or an ASCII file on disk. Field-wise sorting and sub-sorting is available. The manual is clearly written, contains many examples and is well indexed. Online tutorial help is also available. This software is very suitable for Pakistani libraries, but it is expensive and most libraries may not be able to afford it.

A number of libraries in Pakistan are working with Mini-micro CDS/ISIS. The package is used all types of libraries. It was developed by Unesco and is distributed free of charge. There are more than 5,000 licensed users in the world. Various journals publish regular columns on

developments in CDS/ISIS. The package was specially designed for bibliographic records. It is multilingual, provides variable length fields, repeatable fields and sub-fields, and has powerful indexing and searching facilities. Data can be exchanged according to international standard ISO 2709. Advanced programming can be done in the PASCAL language. Well elaborated documentation is available. The latest version, 3.07, was released in December 1993. It can be run on a local area network. Although CDS/ISIS cannot perform all housekeeping operations easily, its use is rapidly multiplying in Pakistan. Five Pakistan Library Association Computer Training Centres offer regular courses on CDS/ISIS and hundreds of librarians have become trained users.

The MINISIS package, issued by the International Development Research Centre, Canada, is currently being used in about 350 institutions in the world. MINISIS can presently be used only on minicomputers but a microcomputer version is expected to be issued in 1995. This version, version II, will be issued in English, French, Spanish, Chinese and Arabic. It will include facilities for library accounting, acquisitions, cataloguing, online public access catalogue (OPAC), circulation, serials control and interlibrary loan. The microcomputer version of MINISIS is expected to be very suitable for use in libraries in Pakistan.

The Sci-Mate package, developed by the Institute of Scientific Information, Philadelphia, is used in the WAPDA House Library at Lahore. It is designed specifically for menu-driven searching of a wide variety of online databases and for the management of textual information.

LIBRARY SOFTWARE DEVELOPED IN PAKISTAN

Several attempts have been made to develop library applications software in Pakistan.

The Kitabdar package, developed by Silicon Systems Ltd., is currently being used in five libraries in Lahore. Based on PASCAL, it is the first Urdu library software in Pakistan. It is specially designed for research and reference libraries. It can mix both Urdu and English in the same text field. Sorting is fast. It provides speedy and comprehensive searching on twenty-eight fields. Though not based on any standard format, it is good in cataloguing. However, the acquisition and circulation functions are not properly designed. A local area network version is also available.

The Pak Book Corporation developed a package known as Pak Library Software for medium-size libraries. Using Foxbase version 2.0, the software

was issued in 1992. However, Pak Library Software was not accepted by the librarians, so it has been discontinued.

The Library Automation and Management Program (LAMP) has been developed by the Netherlands Library Development Project-Pakistan (NLDP-P), with the collaboration of the Pakistan Library Association (PLA). It has been designed specially for Pakistani libraries. LAMP was developed in CDS/ISIS using the PASCAL advanced programming facility. It can handle the following library housekeeping routines:

- Acquisition (budget control, ordering routines, payments record)
- Cataloguing (bibliographic information, printing cards, printing bibliographies, searching)
- Circulation (borrowers' record, check-in and check-out of items, reservations, calculation of fines)
- Selective Dissemination of Information
- Serials control (acquisition and cataloguing of serials, holding list)
- Authority files (publishers, subjects and name authorities for both serials and monographs)
- Management reports (statistical reports for acquisition, cataloguing and circulation)
- Utilities (data exchange, spell check, duplication check)

The first version of LAMP is currently being used in more than twenty-five libraries in the country including six legislative libraries of the Senate and national and provincial assemblies. After receiving the feedback from the library professionals, the development of LAMP version 2 has been started.

CONCLUSION

Library automation is in its infancy in Pakistan. No serious efforts have been made in the field of library software in a proper manner. With only six or seven years' experience of library automation, very few persons have been well trained in this field. There is a lack of resource persons in the country. It is the duty of the professional associations and library schools to solve the problems of library software in the country. The PLA computer centres must play an important role in selecting and developing library software suitable for local needs. A National Centre for Library Software Development should be established and a MARC format for Pakistan should be developed. Library software should be developed to deal with materials in local languages such as Urdu, Punjabi, Pushto, Sindhi, and Baluchi. Standards for library cooperation, interlibrary loan, and electronic mail should be fixed and software be designed for this purpose. Programs should be developed to

exchange data among databases of different formats and incompatible environments. To improve the marketing of library software, new vendors should also be encouraged by government institutions and professional associations.

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The Best Library Software for Developing Countries: More than 30 Plus Points of Micro CDS/ISIS*

INTRODUCTION

Computer technology is gaining rapid popularity in a wide range of libraries and information centers in developing countries. For various reasons, the selection of library software has always been a problem in these countries. Software normally developed in advanced countries does not fulfill the requirements of libraries in less developed countries. These packages are generally too expensive to be procured by libraries with a limited budget. Because of the lack of library automation experts and other resources, software development is difficult in developing countries. To achieve the goal of universal bibliographic control, the United Nations Educational, Scientific and Cultural Organization (UNESCO) took the initiative and decided to help the developing countries automate their libraries. In 1986 UNESCO released the first version of Micro CDS/ISIS.

LIBRARY SOFTWARE FOR DEVELOPING COUNTRIES

Due to its many excellent characteristics, CDS/ISIS may be considered the best software for libraries in developing countries. The following sections describe the thirty-four major characteristics of CDS/ISIS that make it especially appropriate for these libraries.

1. Available without Cost

The lack of financial resources is a major hindrance when introducing information technology in developing countries. Due to meager budgets, poor libraries are hardly able to run their manual and routine operations. If they arrange hardware for automation, then the price of software is again a greater problem for them. Although CDS/ISIS is protected by copyright and is not shareware or public domain software, it is available free of cost for noncommercial use. The software, including three floppy diskettes and a comprehensive user's manual, can be procured without paying any money.

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* Source: "The Best Library Software for Developing Countries: More than 30 Plus Points of Micro CDS/ISIS." *Library Software Review*, vol. 16, no. 1 (Spring 1997): 12-16

BEST COPY AVAILABLE

The software can be used legally by license holders. This license is not as restrictive as some commercially produced software packages. The use of multiple copies of the system is permitted within each institution granted a software license.

2. Easy Distribution

One can get the software in an easy way. UNESCO has appointed distributors throughout the world to assist in supplying the software to those who wish to use it. These distributors are in many cases national focal points for the UNESCO General Information Programme. Regional and national distributors totaled seventy-two in April 1995. There are also distributors for organizations in specific sectors. These are sixty-five distributors that cover such areas as agricultural information and energy information. To get the license, one has to fill in the form and send it to the distributor. The updated list of distributors and their addresses is available from UNESCO, Paris. In the absence of an available distributor, UNESCO can be contacted directly.

3. Multilingual Software

CDS/ISIS is multilingual library software. The standard software can manage English-, French-, and Spanish-language databases. Versions in other languages include Latin, German, Italian, Arabic, Hungarian, Thai, Tibetan, Hindi, and Chinese.

4. Specially Designed for Bibliographic Information

The CDS/ISIS package has been developed for information about bibliographic documents such as books, journal articles, or conference proceedings. Usually, each record in the database contains information about one document. Many features of CDS/ISIS differ from those in database management systems, which have been designed for general purposes.

5. A Reliable Organization of Support

A sound organizational support system is always a basic criterion for software selection or evaluation. CDSI/ISIS is designed and developed by a well-established and stable organization, that is, UNESCO. This organization has worked on the software for a number of years. The main-frame version of CDS/ISIS was developed in 1975. UNESCO acquired a permanent, full-time staff for developing the software.

6. Available on Main frame, Mini-, and Microcomputers

Although libraries in developing countries mostly use the microcomputer version of the software, CDS/ISIS is available on mainframe and minicomputers as well. The minicomputer version, MINISIS, was developed by International Development Research Centre (IDRC), Canada. An attractive feature of CDS/ISIS is that the databases created can also be converted to MINISIS and ISIS mainframe software.

7. Minimum Hardware Requirements

CDS/ISIS operates on simple computer hardware. It requires an IBM PC/XT/AT or compatible with only 512-KB RAM. The other requirements include one floppy disk drive, one hard drive, a monochrome or color monitor, and a printer. A special version is also available for WANG PCs working under the native MS-DOS operating system.

8. Larger Database Capacity

An unlimited number of databases can be designed for CDS/ISIS. The maximum number of records in a database is 16 million, which is sufficient for the needs of libraries in developing countries. The software can hold 8,000 characters in a record. 200 fields can be included in each database.

9. Variable Length Fields

In many database management packages, such as dBase or Foxpro, the fields are of fixed length. It is easier to design a system in which fields are fixed length–and for many applications that is no problem. The information can be abbreviated to fit the space available, or codes can be used. Bibliographic data tend to be treated differently from other kinds, with less recourse to abbreviation. Moreover, titles of books and other works that are contained in a bibliographic record may be of any length, from one word to many. To meet this need, CDS/ISIS provides variable length fields. In this case, only the space that has actual data in the field is consumed.

10. Repeatable Fields

Bibliographic applications require repeatable fields. For example, one book may have a number of authors. Each author needs to be of equal status. Many bibliographic databases implemented on general database management systems have one field for "authors"; all authors are entered in one field, but only the first is searchable. In CDS/ISIS, each attribute that has more than

one field is entered in its own field, and each field may be repeated up to 999 times.

11. Sub-fields

Bibliographic data may make extensive use of sub-fields. CDS/ISIS has implemented this facility. It is a very useful feature when a field is divided into different parts to be treated in different ways. An author's name may appear in an index as Smith or John, but sometimes it might be desirable to print it out as John Smith—for instance, when producing data in different reference styles. Sub-fields enable the different parts of the data to be separately manipulated.

12. System Menus and Worksheets

The software is completely menu driven. The main menu is displayed when the program is run, and from this menu other menus are reached by means of one keystroke. Some menus lead to worksheets on which necessary data are entered to carry out a particular function. All the menus and worksheets are designed in various languages. New menus and worksheets can be framed and modified as required.

13. Data Entry Screens

CDS/ISIS provides attractive data entry screens with a maximum of twenty pages. Fields can be designed in six different attributes, including normal, reverse, bold, underline, blinking, and invisible. These attributes can be displayed in different color combinations. Attractive titles can also be created. A major advantage in data entry screens is scrolling fields, which increase the field length to the maximum, that is, 8,000 characters. Setting default values is also possible. More screens can be designed for one database.

14. Powerful Indexing

The indexing method of CDS/ISIS is very powerful. All 200 fields can be indexed in nine ways. Indexing of a particular field is possible with different indexing techniques at the same time, that is, the complete field, each individual sub-field, or each word. Two indexing techniques index text enclosed by < ... > or / ... /. Terms can also be indexed with prefixes or suffixes as required. This flexibility is not normally found in other database management systems.

15. Terms Dictionary

CDSJISIS maintains a list of all terms and words that have been indexed. This list is arranged alphabetically and is called a terms dictionary. One can choose the keywords from the terms dictionary, combine them with different operators, and then search them easily.

16. Accurate and Rapid Searching

CDS/ISIS provides an easy and convenient search language. The indexing method CDS/ISIS used assures fast searching. Boolean operators (AND, OR, NOT) may be used to broaden or narrow the scope of the search. Comparison operators (greater than, less than, equal to) may be used in numerical searches. One can search for records containing or lacking a particular field. Searches may be stored and later recalled or modified. CDS/ISIS offers output of search results on screen, to the printer, or to an ASCII file on disk. Field-wise search is also available. Independent of indexed terms, free text searching is possible, but due to the sequential method of searching, it takes more time. To search for a related group of terms, ANY TERMS are introduced in the software.

17. Display and Print Format

Libraries generally need output report in more than one format from a database. In CDS/ISIS, this flexibility is achieved through a sophisticated algebra-like formatting language. With a little understanding and practice, a user can make reports of his or her own requirements. For example, one can display cataloging data in ISBD format, and accession register style, or other bibliographic forms.

18. Printing and Sorting Facilities

CDS/ISIS includes several features for customized printing. Page layout and margin settings are easy. One can print directly to a printer or to an ASCII file for further manipulation or additional formatting with a word processor. Field-wise sorting and sub-sorting are available. Four sorting keys are allowed. The printing of catalog cards and labels through CDS/ISIS has been successfully experienced in the libraries.

19. Stopword File

The concept of stopwords is not alien to information workers and librarians. This is a list of common, non-informative words that have no

worth for searching, and one may want to prevent these words from being indexed. The examples of these words are articles, prepositions, and conjunctions. Within CDS/ISIS, up to 799 words can be specified as stopwords. This feature is not generally available in other database management systems.

20. Data Exchange

Records from one database can easily be transformed to others with the help of ISIS import/export services. The major advantage of CDS/ISIS is that it exports data in an international standard format, that is, ISO 2709. Thus the data are exchangeable between other software packages that use this standard. Programs have been developed to transfer data from dBase and others to CDS/ISIS. Records can also travel between two CDS/ISIS databases, even those of incompatible formats.

21. Password Protection

Passwords can be used to protect CDS/ISIS from unauthorized use. It is also possible to give different individuals or groups of users a password that will allow them to use different functions or see different databases.

22. Pascal Support for Advanced Programming

CDS/ISIS includes a Pascal compiler that can be accessed from the main menu. The software itself is written in Pascal and is built up from procedures written in Pascal. Many of these have been included in a library of procedures that can be accessed by the programmer. Anyone with knowledge of Pascal programming may write programs in the high-level Pascal programming language, compile them into the object code, and run them in CDS/ISIS. With this feature, one can go beyond the initial capabilities of CDS/ISIS.

23. Sample Databases and Programs

To facilitate users in learning the software, some sample databases and programs have been provided with standard CDS/ISIS. The databases include a catalog and a thesaurus database. The programs include a searching interface, a keyboard display, and a thesaurus program. Source codes of Pascal programs are also made available.

24. User Interfaces

To enhance CDS/ISIS' searching facilities, people have developed different user-friendly interfaces with the software. Advanced programs for circulation, selective dissemination of information (SDI), current awareness service (CAS), global change, creating new databases, facilitating data entry, and report creating have also been developed by the users of CDS/ISIS throughout the world.

25. Documentation

Although on-line help is not included with CDS/ISIS, a comprehensive reference manual of more than 300 pages has been prepared by UNESCO. The manual is properly elaborated and easy to understand. UNESCO keeps its users well informed with the latest developments through journals, bulletins, and newsletters issued for this purpose. A number of other periodicals include articles on CDS/ISIS. The following journals have started permanent columns for general discussion and for answering queries about CDS/ISIS: *Information Development* (United Kingdom), *Information Trends–News Magazine* (Botswana), *Program* (United Kingdom), *The ASTINFO Newsletter* (Philippines), and *UNISIST Newsletter* (France). A special journal focusing on CDS/ISIS has started publication from Argentina. It is a quarterly journal called *INFOISIS* and it publishes both English and Spanish editions. A bibliography compiled by Ernesto Spinak lists 39 books and monographs and 142 articles published in different languages throughout the world. This bibliography, last updated on April 18, 1996, is available on the Internet.

26. Network Support

Since version 3.0, CDS/ISIS includes features to allow it to function well in a multi-user environment. Full local area network (LAN) support is available. The main features that make the use of software by more users possible are record locking and database locking. Record locking prevents more than one user from accessing a record at a time to edit it. Database locking prevents a user from accessing a database when certain system functions such as inverting the file are being performed. However, data entry and searching may be performed by more than one user simultaneously.

27. Rapid Development

CDS/ISIS does not have such a long history. Its first version was released in 1986. Improved versions have been issued in 1987, 1988, 1991,

and 1993. Now, version 3.07 is in the field. After receiving feedback from users all over the world, the experts and UNESCO quickly overcame the problems witnessed and inserted new facilities in the software. The new versions of CDS/ISIS will be written in the C++ programming language, which is more powerful than Pascal.

28. Unix and Windows Versions

UNESCO plans to produce versions of CDS/ISIS for other operating systems. A beta-test release of CDS/ISIS for UNIX has been issued to selected institutions. Although the DOS version can also be installed and run under Microsoft Windows, a version specifically designed to run under Windows is under development. A beta-test version of WINISIS has been released in which searching, data entry, and printing services have been much improved.

29. CD-ROM Version

UNESCO has produced a version of the package, called ISISCD, that allows read only and includes the facilities to search and retrieve and to sort and print from the database. This can be used on a multi-user system to prevent unauthorized editing of the database. On a single-user system, it should be used as the means of access for the people who are not permitted to make changes to the database.

30. Easy Customization

CDS/ISIS may easily be tailored to the particular local requirements of different developing countries and different institutions. New functions may be added to the menus by modifying them. System worksheets and help messages may be changed. System attributes and colors can be changed. New language versions may also be designed locally.

31. Versatile Applications

CDS/ISIS has been applied to various purposes throughout the world. Standard applications like MARC, CCF, and MIBIS have been prepared using CDS/ISIS. The national libraries of Portugal and Greece are using CDS/ISIS for producing national bibliographies in UNIMARC format. Directories have been produced with the help of CDS/ISIS. An application for on-line public access catalogs (OPAC) has also been written. Library housekeeping systems include SANJAY from India and LAMP from Pakistan. Using CDS/ISIS, a thesaurus in the field of economics named

MACROTHESAURUS has been issued by the Organization of Economic Cooperation and Development (OECD), Paris.

32. Worldwide Use

More than 15,000 institutions use CDS/ISIS all over the world. The number of users in Latin America alone is about 7,000. The number of users in Asia is more than 2,500. There is a strong network of user groups throughout the world. An International Association of CDS/ISIS Systems and New Information Technologies Users and Developers (Association ISIS-NIT) holds international and regional conferences regarding new developments in CDS/ISIS. Many countries assemble their own national user groups. In Italy, a user group with 1,000 participants convened. Niger has a user group with 70 members. Thailand has an active user group with 200 institutions and about 200 individual members. The Dutch-speaking user group has about 100 members.

33. CDS/ISIS on the Internet

Since the summer of 1992, there has been a worldwide electronic user group on the Internet. In April 1994, the number of registered electronic subscribers was about 300, and the group archive was about 1 MB of interesting information. The discussion group is accessible to users connected to academic networks such as the Internet, JANET, or EARN, and to other networks such as GreenNet that have Internet connections. Users, mainly from Europe, Latin America, North America, and Australia, are exchanging information about the more complex areas of CDS/ISIS, such as the writing of Pascal programs and problems in the formatting language.

34. Training Facilities

Training facilities in CDS/ISIS are available all over the world. Training courses for beginners and potential users are arranged in various countries. In offering courses on CDS/ISIS, the National Information for Science and Technology (NISSAT), India; Asian Institute of Technology (AIT), Bangkok, Thailand; and Pakistan Library Association Computer Training Centers are eminent. Regular courses in library and information sciences at various universities also include training on CDS/ISIS.

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Micro CDS/ISIS: What's New in Version 3.0*

INTRODUCTION

As Pakistani libraries are rapidly being automated, CDS'ISIS is not new for us. Computerized Documentation System/Integrated Set of Information Systems popularly known by the acronym CDS/ISIS is a very versatile and user-friendly library software developed by UNESCO. It is a non numeric database management software package specially designed for the handling of bibliographic records. It is widely used in developing countries for the following salient advantages:

- It is free of cost.
- It is multilingual
- Convertible to MINI/ISIS and ISIS mainframe.
- UNESCO provides training facilities. In Pakistan this is being done by PLA-Computer Training Centres at Lahore, Karachi, Islamabad, Peshawar and Quetta.
- UNESCO supports research and enhancements of its capabilities.

In our country, libraries have very limited budget specially for equipment. Since CDS/ISIS is free of cost, therefore, every library can procure it easily. We have several languages in our country. An Urdu version is also being developed in our country by Netherlands Library Development Project-Pakistan (NLDP). Being multilingual specially useful for oriental languages, it is most suitable for our libraries. An attractive feature of this software is that the Databases created through this, can also be converted on Mini/ISIS and ISIS Mainframe software. Our librarians and library staff are not well versed with computer and software use. Continued orientation courses supported by UNESCO/NLDP, and PLA can be another attraction for our library automation programs. In our country, there is no institution engaged in software research and enhancement of its capabilities. For CDS/ISIS, UNESCO provides these facilities and keeps its users well informed with latest developments through journals, bulletins, and newsletters issued for this purpose. More over, NLDP and PLA have also entered in this field.

On the basis of above mentioned features, CDS/ISIS is recommended as most suitable software for automation programs in Pakistani Libraries. The same can be used as standard software in the country. NLDP is working on a

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* Source: "Micro CDS/ISIS: What's New in Version 3.0." *Pakistan Library Bulletin*, vol. 24, no. 4 (December 1993): 17-26.

'standard format' for use in Pakistani Libraries through CDS/ISIS and the research for improvements in it will be carried on by PLA.

HISTORICAL DEVELOPMENT OF CDS/ISIS

Originally this software was developed by International labour Organization. In 1964 ILO developed the software; 'Integrated Set of Information Systems' known as Micro ISIS to run on a mainframe computer (IBM 360). In 1975 it was rewritten by UNESCO as CDS/ISIS to develop a database of UNESCO publications and to impart regular training on computerized information retrieval to librarians.

International Development Research Centre (IDRC) incorporated modifications of Micro ISIS using it with Minicomputers (HP 3000) and the modified version is called MINISIS. In 1986 UNESCO issued an ISIS version for use on Micro computers. That is IBM PC compatible.

A second version (version 2.0) of the software was released with restricted circulation from late 1987 and by the end of 1988 version 2.3 had been developed. Version 3.0 has been issued in early 1991.

NEW FEATURES

In Pakistan, most institutions are using CDS/ISIS version 2.0 or 2.3. New enhancements will be useful for those librarians who are already working with the earlier versions:

1. New Installation Procedure

In version 3.0 the layout in the 3 distribution diskettes has been changed. A new installation program (ISISINST) is now provided to make installation of the software easier. The program checks for the previous existence of versions of ISIS and includes options as to whether or not to proceed with the installation. The old INSTALL.BAT is still provided for manual installation.

2. Local Area Network (LAN) Support

Version 3.0 of CDS/ISIS provides full LAN support, i.e. simultaneous access to a given data base by two or more users for both searching and data entry. However, in order to maintain data base integrity, certain functions, such as master file backup/restore, inverted file update or import operations, require an exclusive write access, i.e. they may only be performed if no other user is writing to the data base. CDS/ISIS provides appropriate locks to

prevent this to happen. If you attempt to use one of these functions while the data base is locked by another user, CDS/ISIS will send you an appropriate message and cancel your request. Likewise, CDS/ISIS will not allow you to modify a record which is already being modified by another user. The Inverted file may be updated while other users are searching the data base. This however will slow down the search. You may allow this to happen by setting the appropriate value of parameter 13 in SYSPAR.PAR or parameter 0 of dbn.PAR (see below).

CDS/ISIS should work on most types of networks. It has been successfully test on NOVELL, 3 CON/LAN Manager, PE NFS, and BANYAN VINES networks and a simultation of PC LAN on a SUN (UNIX machine). For a correct functioning of CDS/ISIS in a network environment you must:

a) Set up the proper user access rights to the CDS/ISIS directories and files and ensure that these are sharable;

b) Ensure that no two users have the same physical work files directory (as defined by parameters 4 of SYSPAR.PAR). One way of doing this it to provide each user with a private SYSPAR.PAR file on the local machine and set parameter 4 to point to the local disk. Alternatively, if your network software allows you to do so, you may establish a separate virtual disk for each user on the server.

c) Define the proper value of parameter 14 in SYSPAR.PAR and, if necessary, of parameter 0 in the dbn.PAR of each shared data base. This value must be greater than zero for all shared data bases, and may be set to 0 for local data bases (or read only data bases)

3. New Parameters in SYSPAR.PAR

Parameters 11 and 12 have been added to allow you to redefine the graphic characters for boxes of type 1 and 2 respectively. These parameters only apply to the PC version of the system and consist of string of six characters defining:

1. the vertical sides
2. the horizontal sides
3. the top left corner
4. the top right corner
5. the bottom left corner
6. the bottom right corner

for example:

11 = |-++++

12 = ******

produce the following boxes:

type 1

```
+--------+
|        |
|        |
+--------+
```

type 2

```
********
*      *
*      *
********
```

Parameter 13 has been added to control Expanded memory support, as explained in section "Expanded memory support" below (PC version only).

Parameter 14 has been added to control network support. It is defined as follows:

14 = 0 (or missing): single user (non network version)

14 = 1 : full network version – this parameter allows the simultaneous searching and updating of both the master and inverted file by two or more users. Because of this, the search function is slower than in single user mode, to allow proper task interlocking.

14 = 2 : restricted network support – this parameter allows the simultaneous searching and updating of the master file (i.e. many users may search and/or update the master file). This user guarantees, however, that the inverted file will not be updated while a data base is active. This allows the search to be as fast as in the single user version.

Parameter 14 may be overridden by parameter 0 of dbn.PAR for a particular data base (see below under 'dbn.PAR)'.

Menu and submenu options in function key definitions (Knn=parameters) may now be made language independent by using the internal option identifier (i.e. the option identifier in the English version of the menu or submenu as originally supplied by UNESCO) prefixed by a period (.).

For example, the following autotype string.

?ceds^Mssart^Md

will not work with those menus which use an external identifier different from the internal option identifier (e.g. in French). To make this string work for any language, you should code it as follow:

?.ceds^M.s.sart^M.d

The special characters ^ ! ? may now be autotyped by prefixing them with (backslash). e.g.:

^M will autotype the Enter key, but

\^M will autotype ^M

An internal option identifier may now be assigned to menu options calling a menu exit (action code E). As this passed, if present, to the menu exist, it allows you to develop language independent exists by assigning the same internal option identifier to all language versions of the menu calling the exit.

4. dbn.PAR

A new parameter (Parameter 0) has been introduced, which may be used to change the value of Parameter 14 of SYSPAR.PAR for a particular data base. If parameter 0 is missing, CDS/ISIS will use the value of parameter 14. Parameter 0 of dbn.PAR has the same format as Parameter 14 of SYSPAR.PAR.

5. Record Locking (PC Version Only)

The network version users three type of locks, which are required to allow the simultaneous updating of a data base by more than one user. These locks, which are recorded in the master file, are:

a) *Data entry lock*: This lock signals that at least one user is performing data entry. When active, it prevents an inverted file update to take place (an inverted file update or creation may only take place when no data entry is being done). The data entry lock is stored in field MFCXX2 of the Master file control record and it counts the number of users performing data entry (by selecting option E of the main menu) this field is incremented by one; it is decrement by one when the user exits the data entry menu.

b) *Exclusive write lock*: This lock signals that an operation requiring an exclusive write access to the data base is in progress. When active, it prevents data entry and other operations requiring exclusive write access. The exclusive lock is stored in field MFCXX3 of the Master file control record: a lock exists if this field is greater than zero.

c) *Record lock*: This lock signals that a given record is being updated and prevents other users from modifying this record. The record lock is stored in the MFRL field of the record: if the record length is negatige then the record is locked.

Appropriate messages are sent to the user if an operation cannot be performed because of a lock granted to another user. Normally a lock is automatically removed when no longer required. It may happen, however, that in some cases (e.g. a power failure) a lock may remain active and prevent, therefore, certain operations to be performed. To solve this problem, a new option (R) has been added to the Data Base Definition menu (xXDEF), which allows you to remove the various locks.

6. Expanded Memory Support and System Restrictions

Expanded memory (EMM) is now supported if installed. For this to work an Expanded Memory Manager must be active in the system when CDS/ISIS is called.

The use of EMM is transparent to the user. CDS/ISIS checks if EMM is installed and will use up to 192K. The first 128K of EMM are used to store ISIS PASCAL programs, the dynamic string area and the stack. The compiler also uses this memory. If 192K are available, two blocks of 32K are used as the formatting work areas, thus extending to 32K the output capabilities of a format, which is normally limited to 8000 characters.

Table 1. System restrictions

	Without EMM	With EMM
Maximum number of identifier in an ISIS Pascal program	200	200
Maximum number of instructions in an ISIS Pascal program (including all programs called in by a USES statement)	10000	16383
Maximum number of loaded programs	10	10
Maximum number of real constants	200	200
ISIS Pascal Run-time stack	2000	16000
ISIS Pascal dynamic string area	16932	49500
Format work area	8000	32767
Worksheet work area size (was 2000 in 2.3)	3000	3000
Maximum Hit record size (was 510 in 2.3)	4000	4000

You may limit, if necessary, the amount of expanded memory to be used by CDS/ISIS through parameter 13 of SYSPAR.PAR as follows:

13=0 no EMM will be used.

13=64K at most 64K of EMM will be used.

13=128K at most 128K of EMM will be used.

13=192K up to 192k of EMM will be used (default)

The system restrictions currently applying are given in Table 1.

7. Exit to DOS

As for the VAX version, you may now enter DOS commands from any menu, by pressing F6. Note that this works only when a menu is actually displayed on the screen.

8. Formatting Language

The following new commands have been added to the formatting language, which should only be used in formats for printing:

NC(n) New column

NP(n) New page

The '(n)' part is optional. If present the command will take effect only if the number of lines available on current column (for NC) or page (for NP) is less than n.

For example, NP will unconditionally produce a new page, but NP(4) will only produce a new page if there are less than 4 lines left on the current page.

As mentioned above, these commands should only be used in print formats. In other contexts (e.g. in an export FST format) they will generate spurious data characters.

An indent command may now be added to the S function, which may be used to provide indentation for a group of fields. For example:

s(V10,V20,V30)(3,3)

will cause field 10, 20 and 30 to be indented 3 positions from the left margin.

The output of a format exit is now processed according to the current display mode.

9. New Indexing Techniques in FST

You may now use 4 new indexing techniques which allow to specify a prefix for search terms extracted with indexing techniques 1, 2, 3 and 4.

These techniques are numbered 5, 6, 7 and 8 respectively. The prefix is specified in the data extraction format as an unconditional literal as follows:

'dp...pd',[format]

where d is a delimiter of your choice (which does not occur in the prefix).

p...p is the actual prefix

For example:

1 8 '/AUTH=/',V24

This will index each word of field 24 and prefix each term with AUTH=.

10. Display Dictionary (Option T in Search Menu)

The T option has been modified to provide the possibility of paging backwards, using the PgUp key, up to 50 screens from the last key selected with the T command. In addition, all the selected terms will remain highlighted whenever the corresponding page is re-displayed.

11. New Option to Convert Hit File to Master File

A new option (H) has been added to the print menu (xXPRT), which allows you to load a Hit file into a master file. This is useful for producing certain types of indexes which were impossible to obtain with version 2.3, such as the use of different subfields of the same repeatable field in different sort keys.

This option loads a Hit file into a Master. Each record of the Hit file becomes a new record in the currently selected data base. These records will contain up to four fields corresponding to the sort keys present on the input Hit file, which are assigned tags equal to the field identifier of the corresponding FST line.

Note that the Hit records are added to the Master file starting from the next MFN to be assigned in the data base. If necessary, you should re-initialize the receiving Master file (using option 1 of the ISISDEF services) before using this option.

When you select this option, CDS/ISIS issues prompt 153; Data base name (from which Hit file was created) so that you may load a Hit file created from one data base into another data base.

12. New Messages

The following three new pseudo-messages have been defined to allow a language dependent response in system worksheets:

133 YN for yes/no

this message is used to check the value of the 'Sort?' field in the print worksheet.

134 LMU

This messages is used to check the value of the load option in the import worksheet (field 'Load/Merge/Update');

135 TSXC

This message is used to check commands T, S, X and C, respectively, in the dictionary display option (option T of the search menu xXGEN).

In non-English system messages data bases, these may be changed to codes which are specific to a particular language. Furthermore the following messages have been added or modified:

113, 151, 152, 153, 154, 283, 335, 336, 337, 415, 422

13. CDS/ISIS Pascal

There are a number of changes/updations and new programs/functions in CDS/ISIS Pascal, but for the purpose of keeping the article not too long, these are not described here. However, persons having interest may contact the writer for further details.

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Use of Micro CDS/ISIS in Pakistan: A Survey*

Micro version of the UNESCO-developed software package CDS/ISIS was released in 1985. Since that time it has been widely used through out the world. The number of licensed users increased from 3,000 in 1988 to 15,000 at the end of 1994 (*1*, p.10). The software is available, for non-profit organizations, free of cost direct from UNESCO, Paris or 100+ regional and national distributors. Mentioning the aims of the package Hopkinson (*2*) says:

> UNESCO's intention in developing CDS/ISIS was to benefit developing countries in which library and information services had no easy and affordable access to software. Additionally, consonant with the aims of PGI, the division of UNESCO at which the package is now maintained, it promotes the exchange of information between different sectors in countries that may be at varying levels of development. From the introduction of the microcomputer version, it has been seen as a tool to use alongside exchange formats (p.76).

CDS/ISIS is a package that has been developed for bibliographic information; that is, information about documents such as books, journal articles, or conference proceedings. However, it has not been developed for library housekeeping applications (*2*, p.77). Major differentiating features, for which CDS/ISIS has become popular in libraries and information centres all over the world, include the use of variable length fields, sub-fields and repeatable fields. It is free of cost. CDS/ISIS uses advanced indexing techniques to enable faster searching of the database. Multilingual nature of the package is another important feature. Text on menus and worksheets can be changed by the user (*3*).

In Pakistan, the use of CDS/ISIS has been evidenced since 1988. UNESCO has appointed Pakistan Scientific & Technological Information Centre (PASTIC), Islamabad as national distributor of CDS/ISIS software. According to Carino (*4*) there were 10 users of the software in Pakistan in 1992. Kips (*1*, p.11) mentions that this number was increased up to 51 in 1992.

CDS/ISIS IN LIBRARY LITERATURE IN PAKISTAN

CDS/ISIS has been much described and discussed in library literature through out the world. Until April 1996 there were 139 books and monographs and 142 journal articles published in various languages (*3*).

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* Source: "Use of Micro CDS/ISIS in Pakistan: a Survey." *INSPEL*, vol. 32, no. 1 (1998): 23-39.

Information on the package began to appear in Pakistani library literature since 1990. Here we will review the literature on CDS/ISIS published in Pakistan in a chronological order.

Bushra (*5*) claimed that the use of CDS/ISIS software was introduced for the first time in the libraries of Lahore by LABELNET project. This project was jointly sponsored by International Development Research Centre (IDRC), Canada and Lahore University of Management Sciences (LUMS) and it aimed at the resource sharing in the libraries in business and economics sector in Lahore. Using CDS/ISIS two databases were maintained. SENET was the database designed for union list of serials. The database contained 605 records. The second database, UNIC, was developed for union catalogue. Until 1990 this database had 1,800 records. Describing the library activities of Dr. A.Q. Khan Research Laboratories, Bhatti and Sultan (*6*) related that they got CDS/ISIS package and training from PASTIC and started library automation. "It is a matter of great satisfaction that the system has shown commendable results and the library users have widely appreciated it" (p.105). Siddiqui (*7*) mentioned that Pakistan Institute of Development Economics (PIDE) at Islamabad became ISIS Resource Centre in 1979 with the technical and financial assistance from the International Development Research Centre of Canada. Under this project PIDE Library created a computerized database containing 700 records. In 1992, Sultan and Bhatti (*8*) described the details of CDS/ISIS use in Dr. A.Q. Khan Research Laboratories Library. They started to use CDS/ISIS on local area network. Since January 1990 the library had entered about 50% of its total documents. Functions of CDS/ISIS and its salient features were also described in the article. In a survey of 95 automated libraries of the twin cities of Islamabad and Rawalpindi, Maqsood (*9*) mentioned that 10 libraries were using CDS/ISIS in 1991-1992 and it was the only software that was mostly used. According to Hanif (*10*) "Library Automation Group (LAG)" was formed in 1992 consisting of librarians and computer specialists of Federal Area. LAG constituted a committee to make a comparative study of two available micro software packages: Micro CDS/ISIS and INMAGIC. Then the study was published in an issue of *LAG News*. Software specifications, indexing features, deferred indexing option for maintenance, input/output features, data validation, search features, output/display, and many other features of the both packages were compared. At the end CDS/ISIS was recommended by the committee for the use in Pakistani libraries. In an article published in *Pakistan Library Bulletin* Naqvi (*11*) described CDS/ISIS software in detail. He introduced various features and modules of the package with a number of examples. In another article in *Pakistan Library Bulletin* Khalid (*12*) described new features of CDS/ISIS that were introduced in version 3.0. This

version was made specially for multi-user environments. New and easy installation procedure was adopted. Many new features in formatting language and indexing techniques were also added to the software. In 1995 Khalid (*13*) described the various important characteristics of CDS/ISIS that were particularly fulfill the requirements of Pakistani libraries. 29 advantages of the use of CDS/ISIS were discussed. Naqvi (*14*) narrated the library automation activities of PIDE. Computerization was started in 1988 with CDS/ISIS version 1.0. Three databases have been developed. LIBRI database, having 14,632 records, includes publications on South Asia. PILS contains 3,100 records of World Bank publications. HOLD database contains 458 records of periodicals holding of the library. In a survey of 40 automated libraries of Lahore, Haroon (*15*) mentioned that 23 libraries use CDS/ISIS for different purposes. This is the mostly used software in the city.

From the literature survey it is apparent that all the studies are either theoretical descriptions of the software or narratives of individual libraries. As CDS/ISIS is the mostly used package in Pakistani libraries and information centres, the opinion of its users should have been studied which the previous literature lacked. There is also a dire need to find out the problems that are faced by the users of CDS/ISIS.

PURPOSE AND SCOPE OF THE STUDY

The purpose of this study is to find out:

- Current status of the use of Micro CDS/ISIS in Pakistan;
- Which functions have been automated with the help of CDS/ISIS;
- Opinion of CDS/ISIS users about various features of the software;
- Problems in the use of the software; and
- Suggestions of users about the support of the software.

Scope of the study covers all libraries, information centres, training centres and library and information related organizations that are using CDS/ISIS package for any purpose. It has been tried to cover institutions from all over the country.

METHODOLOGY

Survey method was adopted for this study. A comprehensive questionnaire was designed. Information about CDS/ISIS use in various institutions were obtained from different bibliographic and personal sources. The questionnaire was sent to 60 organizations out of which, during the time span of a whole year, 40 responded. The response rate is 66.66%. Most of the institutions at Lahore and Islamabad were personally visited by the author

and working professionals were interviewed. Data from Quetta and Peshawar was collected with the help of Mr. Muhammad Ilyas and Syed Liaqat Ali respectively. These are the teachers at LIS departments in both of the cities. There was no response from Karachi.

ANALYSIS OF THE SURVEY FINDINGS

CDS/ISIS use in various provinces

Pakistan is administratively divided into four provinces Punjab, Sind, Balochistan and N.W.F.P. and Federal & Tribal Area (administered federally). The independent part of Jammu & Kashmir is also attached with the country and there is no restrictions in the movement between the two units. Out of 40 institutions studied 23 (57.5%) are situated in Punjab Province. Second area where CDS/ISIS is mostly used is Federal Capital Islamabad where 9 institutions (22.5%) use the package. For other areas see *Table 1*.

Table 1. Area wise distribution of CDS/ISIS users

Rank	Area	Frequency	%
1	Punjab	23	57.5
2	Federal Capital	9	22.5
3	Balochistan	4	10.0
4	N.W.F.P.	3	7.5
5	Azad Jammu & Kashmir	1	2.5
6	Sind	0	0.0
	Total	40	100.0

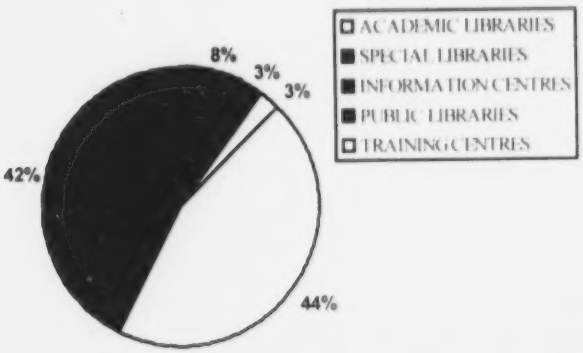
Table 2. Types of CDS/ISIS users

Rank	Type	Frequency	%
1	Academic libraries	18	45.0
2	Special libraries	17	42.5
3	Information centres	3	7.5
4	Public libraries	1	2.5
5	Training centres	1	2.5
	Total	40	100.0

CDS/ISIS users

Survey findings show that CDS/ISIS is mostly being used in academic and special libraries. The ratio of academic libraries is 45% while special libraries (42.5%) are at the second position in the rank order. Other users include information centres (7.5%), one public library and one training centre. See Table 2.

Graph 1. CDS/ISIS Users



Versions of CDS/ISIS

It has been found that three different versions of the software are in use. Information about version is provided by 31 (77.5%) users. The latest version 3.07 is mostly used in 15 (48.3%) institutions. The second mostly used version is 3.0 which is used by 14 (45.2%) users. Version 2.3 is also being used by 2 (6.5%) institutions. See Table 3.

Table 3. CDS/ISIS versions

Rank	Version	Frequency	%
1	3.07	15	48.3
2	3.0	14	45.2
3	2.3	2	6.5
	Total	31	100.0

Software providers

All users provided information about the institutions from where they got CDS/ISIS software. Most of the users (50%) procured the package from PLA Computer Training Centres at different cities. PASTIC, the distributor appointed by UNESCO provided the software to only 8 (20%) institutions. Netherlands Library Development Project (NLDP) supplied CDS/ISIS with their integrated library software LAMP to 6 (15%) institutions. Other software providers include UNESCO (Paris), LABELNET and Pakistan University Grants Commission (UGC). For more details see Table 4.

Table 4. Software providers

Rank	Name of Institution	Frequency	%
1	PLACTC	20	50.0
2	PASTIC	8	20.0
3	NLDP	6	15.0
4	UNESCO	3	7.5
5	LABELNET	2	5.0
6	UGC	1	2.5
	Total	40	100.0

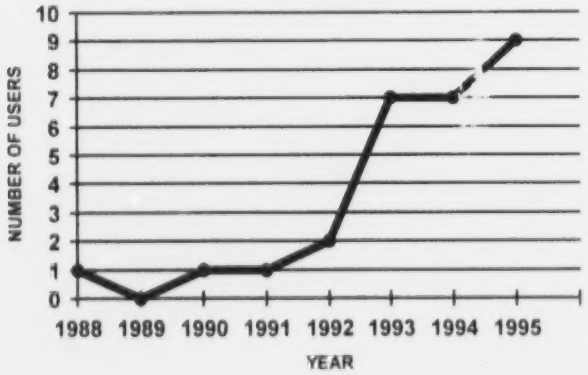
Table 5. Chronological distribution of CDS/ISIS use

Year	Frequency	%
1988	1	3.4
1989	0	0.0
1990	1	3.4
1991	1	3.4
1992	2	6.9
1993	7	24.1
1994	7	24.1
1995	9	31.0
1996	1	3.4
Total	29	100.0

Chronology of CDS/ISIS use

Only 29 (72.5%) users supplied the information about the year when they started the use of CDS/ISIS. In 1988, an institution used the package for the first time. Graph 2 shows that there is an increase in the use after 1991. Education of CDS/ISIS by Pakistan Library Association in various cities of the country appears to be one of the major reasons for this increase. The other reasons include the activities of LABELNET project in Lahore and the development of integrated library software LAMP which was developed by NLDP using CDS/ISIS Pascal programming language. The overall trend of library automation in the country also another reason for the increased use of a free software, i.e., CDS/ISIS.

Graph 2. Chronology of CDS/ISIS use



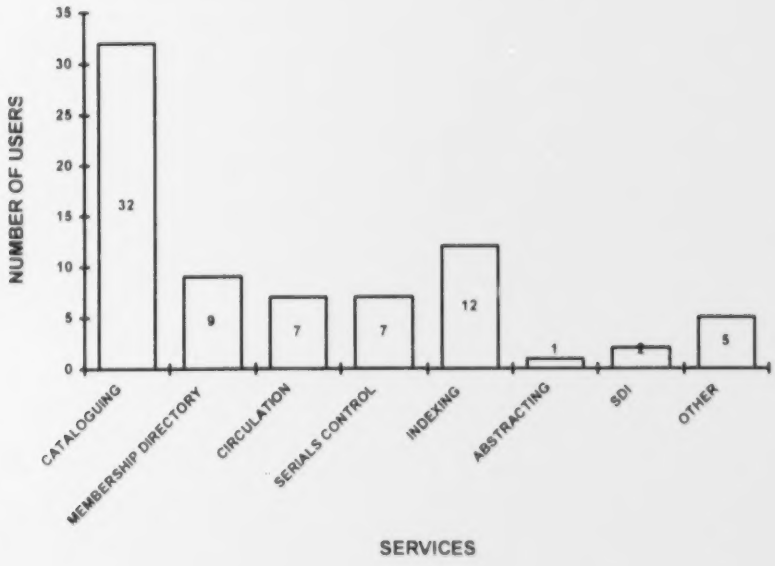
Services automated using CDS/ISIS

The package has been basically developed for the control of bibliographic records. Cataloguing service is thus easily be automated with the help of CDS/ISIS. 80% of users use CDS/ISIS to provide cataloguing services in their libraries. The second largest use of CDS/ISIS is in the field of journal articles indexing. This is another form of bibliographic work which is being done in 12 (30%) institutions. Directory of library members is the third most area of CDS/ISIS use which is in 9 (22.5%) institutions. Other examples of CDS/ISIS use include acquisition, circulation, serials control, abstracting, selective dissemination of information (SDI), stock verification, mailing lists, list of courses offered by the institution, and te ı hing librarians and library and information science students.

Table 6. Services automated using CDS/ISIS (N=40)

Service	Frequency	%
Acquisition	3	7.5
Cataloguing	32	80.0
Membership directory	9	22.5
Circulation	7	17.5
Serials control	7	17.5
Indexing	12	30.0
Abstracting	1	2.5
SDI	2	5.0
Other	5	12.5

Graph 3. Services Automated Using CDS/ISIS



Databases in CDS/ISIS

34 users supplied information about 51 different databases they have designed using CDS/ISIS. 5 institutions have designed 4 databases each. Databases are of various sizes and are meant for various purposes. The maximum number of databases, i.e., 17 (33.3%) have records between 1,000 to 5,000. Three databases have more than 10,000 records each. Total number of records which have so far been entered in 51 databases is 175,217.

Table 7. Size of databases in CDS/ISIS

Maximum MFN	Frequency	%
1-100	5	9.8
101-500	12	23.5
501-1000	6	11.8
1001-5000	17	33.3
5001-10000	8	15.7
10000+	3	5.9
Total	51	100.0

Training in CDS/ISIS

35 users supplied information about the formal training of their staff in using CDS/ISIS. 18 (51.4%) institutions have only one trained staff member each. 9 (25.7%) institutions have 2 each trained personnel. The maximum number of trained staff is 7 which is in one institute. The total number of trained professionals in 35 institutions is 73. From the introduction of CDS/ISIS in Pakistan PLA has been offering training courses on the software. Since 1992 five PLA Computer Training Centres in federal capital Islamabad and provincial headquarters, i.e., Lahore, Karachi, Peshawar and

Table 8. Staff training (N=35)

Rank	Institution	Frequency	%
1	PLACTC	26	74.3
2	PLA (prior to PLACTC)	4	11.4
3	PASTIC	4	11.4
4	LUMS	2	5.7
5	PIDE	2	5.7
6	PINSTECH	1	2.9

Quetta have been regularly training working professionals in the use of CDS/ISIS. According to the survey findings staff from 26 (74.3%) institutions got training from PLA Computer Training Centres. Other training courses were held by PLA (prior to PLACTC), PASTIC, LUMS, PIDE and Pakistan Institute of Nuclear Science and Technology (PINSTECH). See Table 8. Some users attended course on CDS/ISIS held in other countries like Thailand, Holland and Sri Lanka.

Use of CDS/ISIS by library users

A question was asked from the users whether the common library patrons can use CDS/ISIS without the help of library staff or not. Out of 40 respondents only 7 (17.5%) claimed that their users can use the software at their own.

CDS/ISIS on local area network

13 (32.5%) institutions claimed that they use CDS/ISIS on local area network (LAN). Number of terminals ranges from 3 to 25 in different institutions. Discussing the problems regarding the use of CDS/ISIS in a multi user environment one library mentioned that 'Record locking' and 'Database locking' are the problem areas.

Consultants in CDS/ISIS

Library automation in Pakistan is in the stage of infancy. There is a dire need of consultants in using software. There is no formal consultant for CDS/ISIS. However some persons or organizations provide for free help in

Table 9. Consultants in CDS/ISIS

Rank	Name	Affiliation	Frequency
1	Khalid Mahmood	Dept. of Library & Information Science, Punjab University, Lahore	12
2	Sultan Mahmood	Dr. A.Q. Khan Research Laboratories, Islamabad	2
3	Zafar Javed Naqvi	PIDE, Islamabad	2
4	Bushra Riaz	LUMS, Lahore	1
5	Haseeb Ahmad Piracha	Dept. of Geology, Punjab University, Lahore	1
6	Sohail Ahmad	British Council Library, Lahore	1
7	Nisar Ahmad	PASTIC, Islamabad	1

the use of CDS/ISIS. A question was asked whether the users consult outsiders for help in implementation or trouble shooting in CDS/ISIS. In the survey 19 users mentioned the outside helpers. A rank wise list of seven informal consultants have been given in Table 9.

General / support features of CDS/ISIS

In opinion about features of CDS/ISIS the response is not 100%. Out of 32 users 13 (40.6%) are of the opinion that CDS/ISIS is satisfactorily user friendly. 11 (34.4%) users think that user friendliness feature is good. CDS/ISIS is a multi-lingual package. The standard software is available in English, French and Spanish. Versions in other languages include Latin, German, Italian, Arabic, Hungarian, Korean, Thai, Tibetan, Hindi and Chinese. According to 50% users the language coverage feature of the software is good. During last 10 years UNESCO has issued various versions of CDS/ISIS. According to 33.3% users the rapid updation in versions is good. The same number of users think it satisfactory. Various manuals and handbooks are available to help the use of CDS/ISIS. 35.7% users think the publication support of the software is good. 55.2% users are of the opinion that the training facilities in CDS/ISIS are good. 36.7% users think that consultation facility is satisfactory. For more details see Table 10.

Table 10. General / Support features of CDS/ISIS

Feature	Responses	Very Poor	Poor	Satisfactory	Good	Very Good
User Friendliness	32	1 (3.1%)	3 (9.4%)	13 (40.6%)	11 (34.4%)	4 (12.5%)
Language Coverage	28	1 (3.6%)	4 (14.3%)	8 (28.6%)	14 (50.0%)	1 (3.6%)
Rapid Updation of Versions	27	0 (0.0%)	6 (22.2%)	9 (33.3%)	9 (33.3%)	3 (11.1%)
Publication Support	28	2 (7.1%)	4 (14.3%)	9 (32.1%)	10 (35.7%)	3 (10.7%)
Training Facilities	29	1 (3.4%)	4 (13.8%)	6 (20.7%)	16 (55.2%)	2 (6.9%)
Consultation Facilities	30	3 (10.0%)	4 (13.3%)	11 (36.7%)	8 (26.7%)	4 (13.3%)

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Technical features of CDS/ISIS

Field definition capacity in CDS/ISIS is vary high. 200 fields can be defined in a database. According to survey findings 62.1% users believe that this feature is good. Data entry screens in CDS/ISIS have various options and these are modifiable. 50% users think this feature good. Data entry module in

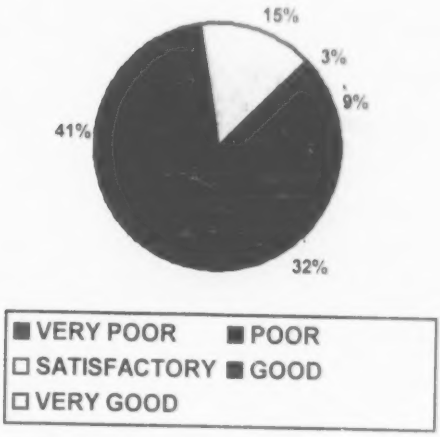
Table 11. Technical features of CDS/ISIS

Feature	Responses	Very Poor	Poor	Satisfactory	Good	Very Good
Field Definition Capacity	29	0 (0.0%)	1 (3.4%)	6 (20.7%)	18 (62.1%)	4 (13.8%)
Data Entry Screens	32	1 (3.1%)	2 (6.3%)	10 (31.3%)	16 (50.0%)	3 (9.4%)
Data Entry Facilities	32	0 (0.0%)	2 (6.3%)	13 (40.6%)	14 (43.8%)	3 (9.4%)
Indexing Features	32	0 (0.0%)	0 (0.0%)	5 (15.6%)	14 (43.8%)	13 (40.6%)
Searching Facilities	32	0 (0.0%)	2 (6.3%)	6 (18.8%)	15 (46.9%)	9 (28.1%)
Searching Speed	32	0 (0.0%)	0 (0.0%)	9 (28.1%)	16 (50.0%)	7 (21.9%)
Display / Print Formats	30	2 (6.7%)	1 (3.3%)	12 (40.0%)	11 (36.7%)	4 (13.3%)
Printing Features	31	2 (6.5%)	4 (12.9%)	16 (51.6%)	6 (19.4%)	3 (9.7%)
Data Exchange Facility	26	0 (0.0%)	3 (11.5%)	8 (30.8%)	12 (46.2%)	3 (11.5%)
Backup Facility	28	0 (0.0%)	1 (3.6%)	11 (39.3%)	11 (39.3%)	5 (17.9%)
Menus	31	0 (0.0%)	1 (3.2%)	10 (32.3%)	16 (51.6%)	4 (12.9%)
Networking Support	19	1 (5.3%)	5 (26.3%)	5 (26.3%)	5 (26.3%)	3 (15.8%)
Advanced Programming Support	19	2 (10.5%)	1 (5.3%)	7 (36.8%)	5 (26.3%)	4 (21.1%)

the package have various facilities. For instance, default data entry and cut and paste facilities are provided. According to 43.8% users data entry facilities are good. CDS/ISIS has powerful indexing techniques which are really needed in a bibliographic database. According to 43.8% users this facility is good while 40.6% users have the opinion that this is very good.

50% users think that the searching speed of CDS/ISIS is good. Nearly same number of users have the similar opinion about the searching facilities. CDS/ISIS has its own display / print formatting language which facilitates the users to design different formats as needed. This language is a little bit difficult to use. 40% users thus think that this language is satisfactory. Printing features in the software are satisfactory according to 51.6% users.

Graph 4. Users' Opinion about Features of CDS/ISIS



Data exchange facility is excellent. Data can easily be exchanged among databases even having different field structures. 46.2% users think this facility good. CDS/ISIS has its own backup facility. According to 39.3% users this facility is good. The same number of users have the idea that this facility is satisfactory. The menus of the software are also modifiable. This facility is good to 51.6% users. Since version 3.0 CDS/ISIS is working in a multi-user environment. Its networking support is good according to only 26.3% users. The same number of users have the opinion that this facility is satisfactory and the same number say that this is poor. Beyond the limitations of CDS/ISIS advanced programming is possible through ISIS PASCAL language. 36.8% users think that this facility is satisfactory. For details see Table 11. Graph 4 shows the overall opinion of CDS/ISIS users about all

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features of the package. In the opinion of 41% users CDS/ISIS is good. The second largest opinion (32%) shows that it is satisfactory.

CDS/ISIS and library / information work

A question was asked from the users whether CDS/ISIS is able to handle all library / information work routines effectively. Total 34 (85%) users answered this question. Only 12 (35.3%) users answered the question in 'yes' while 22 (64.7%) users did not agree with the statement. The users mostly stated the following reasons for the failure of CDS/ISIS in libraries.

- Difficult in acquisition, circulation, SDI and serials control
- Not user friendly
- Difficulties in data entry and printing
- Complex searching is difficult and not user friendly
- No dynamic allocation of memory
- Indexing files are too many and too large to support a big database

Table 12 Problems in CDS/ISIS

Problem	Responses	Frequently	Rarely	Never
Installation errors	29	5 (17.2%)	14 (48.3%)	10 (34.5%)
System hangs	30	2 (6.7%)	16 (53.3%)	12 (40.0%)
Abnormal termination	29	0 (0.0%)	15 (51.7%)	14 (48.3%)
Data corrupted	31	4 (12.9%)	9 (29.0%)	18 (58.1%)
Inverted file removed	29	1 (3.4%)	12 (41.4%)	16 (55.2%)
Errors in inverted file generation	29	1 (3.4%)	14 (48.3%)	14 (48.3%)
Incorrect search results	29	0 (0.0%)	12 (41.4%)	17 (58.6%)
Errors in printing / sorting	27	1 (3.7%)	9 (33.3%)	17 (63.0%)
Backup errors	27	0 (0.0%)	8 (29.6%)	19 (70.4%)
Errors in import / export	26	1 (3.8%)	10 (38.5%)	15 (57.7%)

Problems in using CDS/ISIS

Averagely 75% users mentioned the problems they faced in using CDS/ISIS software. Sometimes there are errors in installation of the package. 48.3% users face this problem rarely. Sometimes during working the system hangs. 53.3% users are suffering from this problem rarely. Abnormal termination of the package is rarely faced by 51.7% users.

Data corruption is another problem which is frequently faced by 12.9% users and rarely by 29%. Due to unknown reasons inverted file occasionally removed. This problem is rarely faced by 41.4% users. There are errors in inverted file generation. 48.3% users face this problem rarely. 41.4% users mentioned the problems in search results. 33.3% users feel problems in printing and sorting and 29.6% users face problems in backup of data. 38.5% users have problems in importing and exporting records. Other problems indicated by the users include lack of duplication check, lack of online help, lack of data validation check, and problems in PASCAL training for ISIS users. See Table 12.

CDS/ISIS user groups

In other countries there are user groups of CDS/ISIS. For example, in Italy there was a user group meeting with 1,000 participants. Niger has a user group with 70 members. Thailand has an active user group with 200 institutions and about 200 individual members. The Dutch speaking user group has about 100 members (3). As in Pakistan there are so many users of CDS/ISIS and they have common problems, user groups at city, provincial and country level have strongly been recommended. For detail see Table 13.

Table 13. CDS/ISIS user group recommended

Rank	Level	Frequency	%
1	City	26	65.0
2	Province	22	55.0
3	Country	21	52.5

Newsletter on CDS/ISIS

As we know, at international level there are so many journals and newsletters which inform the users of CDS/ISIS with new developments and discuss the problems faced by the users. For exchanging experiences in the use of the software a newsletter has heavily been recommended by the users in Pakistan. 33 (82.5%) users are in favor of a newsletter at Pakistan level.

General impression / opinion about CDS/ISIS

27 (67.5%) users expressed their general impressions and opinions about CDS/ISIS. A summary of them is given here.

- In the view of most of the users CDS/ISIS is a good program for libraries
- Good for novice to conceive the concept of database
- Some users say it user friendly and some say not
- It should be modified according to local needs
- It should include spell checker
- Import / export module is difficult and complicated
- It should be modified according to professional needs of libraries
- Circulation module is direly needed
- There should be a version for Windows

CONCLUSION

It is a bare fact that CDS/ISIS is the only software that is mostly used in Pakistani libraries and information centres. Although, in this survey , most of the users are satisfied with the software yet problems are there to be solved out. The package should be improved to cater for all the needs of libraries and information centres. CDS/ISIS may be improved in the light of the discussion in this article. As a large number of reading material in Pakistani libraries is in Urdu language, there should be an Urdu version of CDS/ISIS to handle this material. Beginning of CDS/ISIS training at PLA Computer Training Centres is a praiseworthy step. It is needed to train CDS/ISIS users at advanced level. There should be courses on programming in library services using ISIS PASCAL. ISIS user groups at all levels should be formed and a newsletter on the activities of these user groups should be published. UNESCO and PASTIC should provide funds for this purpose. PLA should arrange consultancy in the use and trouble shooting of CDS/ISIS. Although LAMP is a good effort to formulate a standard database format for Pakistani libraries which are using CDS/ISIS yet this should be improved according to the international standards, i.e., MARC, ISBD, etc. PASTIC should control the distribution of CDS/ISIS in Pakistan and should obligate the institutions to sign the license before using the software. In this regard PASTIC may contact the institutions at its own. It is also important to time to time conduct surveys of this type to know the status of the use of CDS/ISIS and the problems being faced by the users.

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Do You Need a Lamp to Enlighten Your Library? An introduction to Library Automation and Management Program (LAMP)*

INTRODUCTION

Computers have existed in Pakistani libraries for not more than ten years. Some libraries started automation in the mid 1980s. A suitable software and automation training have always been a problem for librarians. There was no national format for library automation. What is more important there was no integrated library software available on the market. Mostly, libraries developed small applications in Dbase and Foxpro in isolation. Library schools were poor in imparting computer training to their graduates. This was the pitiful state of affairs at a time when other countries were investing in Information Highways and the Internet. In these circumstances, the Netherlands Library Development Project (NLDP) took the initiative to introduce new information technologies in Pakistani libraries and help them in automating their procedures.

NLDP was primarily initiated as the Netherlands Scientific Literature Project (SLP) in 1975 by the government of Netherlands. The project was limited to Book Aid, and covered institutions showing interest in receiving books. In June 1991, phase II was started and the name of the project was changed to the Netherlands Library Development Project. The scope of the project was widened to include all library development activities. Library automation became the priority area of the project. For training purposes, five computer centres were set up in federal and provincial headquarters of Pakistan Library Association.

With the help of a team of computer programmers and experienced librarians, NLDP developed the first integrated library software called LAMP. LAMP is a user friendly library package especially designed to cater for the automation needs of Pakistani libraries.

ARRANGEMENT OF LAMP

LAMP is designed in CDS/ISIS. A number of Pakistani libraries are already using CDS/ISIS. LAMP has been developed using advanced

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* Source: "Do You Need a Lamp to Enlighten Your Library: an Introduction to Library Automation and Management Program (LAMP)." *INFOISIS*, vol. 2, no.1 (March 1996): 7-16.

programming feature of CDS/ISIS. LAMP is based on six different databases linked with each other by advanced programming in PASCAL language.

LAMP is a menu-driven program. The main menu has the following options.

AUTHORITY FILES
ACQUISITION
CATALOGUING
CIRCULATION
UTILITIES
QUIT

Acquisition and Cataloguing modules are further divided into Monographs and Serials. All menus have the options either to return to the previous menu or directly to the main menu. Each module has three basic options, i.e., Data entry, Searching, and Reports. In all steps one can enter a new record and edit an existing one as well. In data entry, on-line help is given with each field.

Searching is available by a number of fields. Whole field and word by word searching is possible. Right truncation can also be done. Boolean operators, i.e., AND, OR, and NOT can be used to broaden or narrower the search. During data entry, a number is automatically allotted to each record. So record wise browsing is also possible in searching. Printing is a significant feature of LAMP which is available in searching and reports.

ACQUISITION OF MONOGRAPHS

This module deals with the acquisition of books for the library. First of all, it can handle the budget for bibliographic materials. The yearly budget can be stored in the computer. At any time one can search budget details for a given budget code, department, or budget head. It maintains record for all expenditures from a given budget. Total amount of a budget, amount spent, amount remaining, and amount to be paid can be checked any time.

This module maintains record for a requested book which is going to be purchased. All bibliographic details are entered. Books are ordered to a particular supplier. It produces order slips which are ready for mailing. Books can also be re-ordered. On receiving the books, it automatically calculates the prices. It maintains the payment record and balance of a particular supplier.

Here is a notable point that once the bibliographic information of a book is entered in the acquisition module, it becomes the part of the main catalog of the library and can also be searched for in the cataloguing module. Status of the book, i.e., ordered, received but in process, or catalogued and shelved is shown in the display.

CATALOGUING OF MONOGRAPHS

The most important activity in a library is the cataloguing of books. This module of LAMP records all bibliographic details of a book. In designing this module standard cataloguing code, i.e., Anglo-American Cataloguing Rules II (AACR-II) has been followed. Analytical cataloguing is possible in LAMP. Even chapter wise search can be done through keywords. Various access points such as Accession number, Call number (both DDC and local), Personal author, Corporate author, Title, Series, Publisher, ISBN, Subject heading, and Project or Seminar names are available in searching. Complex search using any combination of different fields is also provided.

In reports, spine labels can be printed. To maintain a manual catalogue, Title, Author, Subject, and Series cards can also be produced. On a given Call number, Subject, or Author, sorted bibliographies can be prepared. Call number wise sorted shelf list is also available. In this module, statistics about library holdings can also be seen. LAMP also tells about the individual performance of a cataloguer, data entry clerk, editor, or a proof-reader.

CIRCULATION OF MONOGRAPHS

In a lending library, books are issued to the authorized members for a specified period of time. In LAMP, circulation control system has been designed to cater for the processes and procedures involving the issue and return of bibliographic items in a library. It provides time and cost effective control on the circulation of items. The automated circulation system is compatible with the traditional manual system prevalent in most of the libraries in Pakistan. Here are some features of LAMP's circulation module:

The system provides the facility to define various loan policies, such as how many books can be issued for which period to a member of a specific category. If the book is overdue, what amount of fine will be charged.

The system registers the library users and allots them membership numbers. One can reserve an issued book. At the time of return, the system displays the reservation status of a book, if any. An item can be reserved for a maximum of three library members. Priorities may be defined for reservation requests.

The system has the provision to display information about the borrowing history of a particular title or a member for a given period of time. It can also show the status of an item such as, on loan, reserved or available on the shelf. LAMP can print reminder notices for overdue books. It automatically calculates the fine on the books returned by a member.

LAMP's circulation module has the provision to provide Selective Dissemination of Information (SDI) services to the users. This service is used to cater for the specific requirements of the users. On defining the subjects of users' interest, the system flags all the items which fall into the defined category of subject. A printed list can be mailed to the users.

ACQUISITION OF SERIALS

Serials are quite different in nature as compared to monographs. A different set of activities is required for the processing of serials in a library. To cater for the requirements of serials, separate sub-sections for acquisition and cataloguing have been designed in the system. This section deals with the acquisition of serials. A set of fields, different from those of monographs, has been designed in the serials acquisition and cataloguing.

Purchase orders of serials can be prepared and renewed annually. Serial's title, purchase order number, supplier's name, requester's name, date ordered, and subscription start and end date wise searching is possible. Reports of a particular supplier can be obtained. Expired and un-expired subscription lists can be printed. Reminders to the suppliers can also be sent.

CATALOGUING OF SERIALS

This option caters for the cataloguing of serials. Access points such as Classification number, Title (Current / Former), Publisher, Subject heading, ISSN, and Frequency are available in searching. The system displays and prints the complete holding report of a particular periodical title.

AUTHORITY FILES

Authority files are created to avoid unnecessary duplication of information and maintain consistency and uniformity in the database. There are three categories of authority files namely, Organization authority, Name authority and Subject authority.

In the Organization authority file, by following a set of rules, codes are allotted to the publishers, suppliers, projects, departments and organizations. Once the authority is created, a code is used in the database instead of detailed information of the corresponding publisher, supplier, or

organization, thus, saving vital space, avoiding unnecessary duplication and ensuring uniformity and consistency. In the search mode, the system displays complete information for every code entered in the authority files.

In the Name authority file, only a select spelling of a particular name should be used in the database, other spellings of a name can be recorded in the authority files. Whenever a user searches for a name with the spellings other than what is standard in the database, the system will give a message: See the standard spellings. The standard spellings will be displayed with the See reference.

Subject headings may be allotted to the bibliographic items to denote their subject contents. For subject headings, a controlled vocabulary, thesaurus or a subject authority list is employed. The examples of such authorities are Library of Congress Subject Headings (LCSH), Sear's List of Subject Headings, etc. The allotted subject heading (term) and its relations like, RT-Related Term, BT-Broader Term, NT-Narrower Term, UF-Used For, and SA-See Also are entered in the Subject authority file. In catalog searching, for every term in the Subject authority file, the system will display all the relevant terms.

UTILITIES

The utilities require advance knowledge of DOS, Wordprocessing and CDS/ISIS. Following are the utilities which have been developed as a part of LAMP software:

1. Global change
2. Spell check
3. Data conversion from Dbase to CDS/ISIS
4. Downloading from CD-ROM
5. Downloading from text files
6. Title duplication check
7. Accession number duplication check

SERNET

Another important information product which has been incorporated into LAMP is Serials Networking (SERNET). It is a bimonthly compilation of the articles of approximately 1100 journals which are available in the major libraries of Pakistan. SERNET has focal points at all provincial capitals while the head office is in Islamabad. The SERNET software is

provided as a part of LAMP so that institutions are able to enter their own data.

LAMP URDU VERSION

As a major part of library resources in Pakistan is in Urdu language, NLDP has converted LAMP into Urdu. For this purpose NLDP obtained the services of Advanced Micro Systems (AMS). All menus and worksheets have been composed in Urdu.

DOCUMENTATION

NLDP has published a well-written manual of LAMP of about 250 pages. It clearly discusses how to work in LAMP. It also contains introduction to DOS and CDS/ISIS. A chapter on quick start LAMP is included in the manual. Field-by-field guide to the LAMP databases is provided. It also contains the following:

- LAMP installation procedure
- General cataloguing guidelines followed in LAMP
- Rules for allotting authority codes
- Sample filled-in worksheets and outputs
- Country codes
- Language codes
- Backup of LAMP databases
- LAMP licensing agreement
- ASCII codes
- SERNET information

A workbook on LAMP with examples has been prepared by NLDP and is ready for printing.

TRAINING

PLA Computer Training Centres at Islamabad, Lahore, Karachi, Peshawar and Quetta offer regular courses on LAMP. NLDP also conducted special courses for the students of library and information science at various universities in the country. LAMP courses have also been conducted at Multan and Bahawalpur. LAMP demonstrations have also been arranged in all big cities of Pakistan. University Grants Commission has recommended

practical training of LAMP in the new curriculum of Masters in Library & Information Science.

USE

LAMP is now the only library software which is rapidly gaining popularity in maximum number of Pakistani libraries. It has been purchased by ten libraries including six legislative libraries of the Senate, the National Assembly and the Provincial Assemblies. LAMP is currently being used in fifty other libraries on trial basis. Some libraries successfully use LAMP on local area network (LAN). LAMP software has been sent to sixty international institutions in more than 15 countries. One copy of LAMP has already been sold to the University of the South Pacific in Fiji. Some other institutions from Australia, New Guinea and Syria have shown interest in purchasing LAMP.

AVAILABILITY

LAMP is available from Pakistan Library Association (Headquarters and five branches in Islamabad, Lahore, Karachi, Peshawar and Quetta). For further technical explanations and program cost please contact:

Secretary General
Pakistan Library Association (Headquarters)
National Library of Pakistan
Constitution Avenue, Islamabad.

Riaz Khan
National Representative
Netherlands Library Development Project (NLDP)
13, St.12, F7/2, Islamabad.

FUTURE DEVELOPMENTS OF LAMP

Considering the comments and recommendations received by the users it has been decided to develop version 2.0 of LAMP. Version 2.0 is expected to be more flexible and more in line with AACR-II and MARC format. A lot of work has already been done so far on version 2.0. The version 1.0 was intentionally kept simple so that the librarians could adopt it easily. The greatest advantage of LAMP is that it is a totally indigenous effort and modifications can be easily incorporated. The expertise is available within

Pakistan and there is no foreign dependence. It is expected that version 2.0 will be developed in MINISIS version H.

The Development of the LAMP Software for Use in Developing Countries and its Marketing in Pakistan*

INTRODUCTION

With the rapid development of new information technologies in developing countries there is an emerging market for software which can be used in libraries and information centres. Software designers in advanced countries present a variety of applications for library and documentation work. In developed countries, the cost of development and maintenance of software can be very high and the libraries have to pay a large amount of money to automate their procedures. In developing countries the situation is entirely different. One of the major reasons for not automating the libraries is the lack of funds. The governments in developing countries hardly satisfy the basic needs of their inhabitants. Therefore, storage and dissemination of information is not included in their priorities. Libraries want a cheaper way to automate their systems and that is why the costly American or European library software packages may not be appropriate.

There could be two solutions: either advanced countries design software at a lower price and supply it to developing countries or developing countries themselves take the initiative to fulfill their needs. Adopting the first option will create some other problems. For example, cheaper editions of software are difficult to develop in advanced countries where programming rates are high along with problems in distribution, training, after sale service, and so on. The second option seems to be more suitable but it also has some difficulties. For example, non availability of a competent software development team, financial resources for development, etc.

Realizing this dire need of libraries in developing countries the Netherlands Government decided to take the initiative to develop a library software package within a developing country. This work was carried out under a project named as Netherlands Library Development Project for Pakistan (NLDP-P) for which the Dutch Government provided all funding. The project was started in 1991 and concluded in 1996. In addition to the

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* Source: "The Development of the LAMP (Library Automation and Management Program) Software for Use in Developing Countries and its Marketing in Pakistan." *Program*, vol. 32, no. 1 (January 1998): 37-48.

development of a library software. NLDP-P had the objectives to provide managerial, technical, and financial assistance in the information field for:

- Developing human resources through training.
- Formulation of national policies and plans.
- Introduction of information technology.
- Developing national database.
- Establishing information networks.

DEVELOPMENT OF, AND DESCRIPTION OF LAMP

In 1993, with the help of a team of computer programmers and experienced librarians, NLDP-P started the development of an integrated library software in Pakistan called LAMP. The package was designed using Micro CDS/ISIS. A number of Pakistani libraries were already using Micro CDS/ISIS which is a program developed by UNESCO, distributed free of cost, and in use in 15,000 institutions throughout the world. LAMP is based on six different databases linked with each other by advanced programming in PASCAL language provided in CDS/ISIS. LAMP is a menu driven program with the main menu having the following options: Authority Files; Acquisitions; Cataloguing; Circulation; Utilities and Quit.

The acquisitions and cataloguing modules are further divided into Monographs and Serials. All menus have the options either to return to the previous menu or directly to the main menu. Each module has three basic options, i.e., Data entry, Searching and Reports. In all steps one can enter a new record or edit an existing one as well. In data entry, on-line help is given with each field.

Searching is available by a number of access points. Whole field and word by word searching is possible. Right truncation can also be done. Boolean operators, i.e., OR, AND, and NOT can be used to broaden or narrow the search. During data entry, a record number is automatically allotted to each record. Therefore, record wide browsing is also possible in searching. Results of searches and reports can be printed.

Acquisition of Monographs

This module includes facilities for handling budgetary details for books and can produce reports for a given budget code, department, or budget head. Giving the total amount of a budget, amount spent, amount remaining, and amount to be paid. It also deals with requests for books to be purchased from particular suppliers and produces order slips which are ready for mailing. On receiving the books, it automatically calculates the prices. It maintains the

payment record and balance of a particular supplier. Details of the status of the book, i.e., ordered, received but in process, or catalogued and shelved, can be displayed.

Cataloguing of Monographs

In designing this module, the standard cataloguing code, i.e., Anglo American Cataloguing Rules, 2nd Edition (AACR II) has been followed. Analytical cataloguing is possible in LAMP and even chapter wide searches are possible using keywords. Various access points such as Accession number, Call number (both DDC, Dewey Decimal Classification, and local), Personal author, Corporate author, Title, Series, Publisher, ISBN, Subject heading, and Project or Seminar names are available in searching. Searching using a combination of different fields is also provided. In reports, spine labels can be printed. For libraries which wish to maintain a manual catalogue, Title, Author, Subject, and Series cards can also be produced. For a given call number, Subject, or Author, sorted bibliographies can be prepared. Statistics about library holdings can also be produced. LAMP can also report on the individual performance of a cataloguer, data entry clerk, editor, or a proof-reader.

Circulation of Monographs

The automated circulation system of LAMP is compatible with the traditional manual system prevalent in most of the libraries in Pakistan. The system provides the facility to define various loan policies such as how many books can be issued for what period to whom and if the book is overdue, what fine should be charged. The system registers the library users and allots them membership numbers. A user can reserve an issued book and at the time of return, the system displays the reservation status of a book, if any. An item can be reserved for a maximum of three library members. Priorities may be defined for reservation requests. The system has the provision to display information about the borrowing history of a particular title or a member for a given period of time. It can also show the status of an item such as, on loan, reserved or available on the shelf. LAMP can print reminder notices for overdue books. It automatically calculates the fine on overdue books. LAMP's circulation module is able to provide a Selective Dissemination Information (SDI) service to the users. This service is used to fulfil the specific requirements of users. On defining the subjects of user's interest, the system flags all items which fall into the defined category of a subject. A printed list can be mailed to the users.

Acquisition of Serials

To cater for the specific requirements of serials, a separate sub-section for the acquisition of serials was developed. Purchase orders for serials can be prepared and renewed annually. Searching by a serial's title, purchase order number, supplier's name, requester's name, date ordered, and subscription start and end date is possible and reports of a particular supplier can be obtained.

Cataloguing of Serials

In this module searches can be made using access points such as Classification number, Title (current / former), Publisher, Subject heading, ISSN, and Frequency. The system can display and print a complete holding report of a particular serial title.

Authority Files

Authority files are created to avoid unnecessary duplication of information and maintain consistency and uniformity in the database. There are three categories of authority files in LAMP, namely Organization authority (Publisher, supplier, corporate body, department, and project authorities for monographs and serials), Name authority and Subject authority.

Utilities

Some additional programs have been provided in LAMP and these are called utilities. Sometimes these programs require advance knowledge of DOS, Word processing and CDS/ISIS. Here are some of the important utility programs:

- Global change
- General editing
- Spell check
- Duplication check (Title and Accession number)
- Accession register
- Backing up LAMP databases
- Shelving control

As most of the library resources in Pakistan are in the Urdu language, NLDP-P has converted all menus and data entry worksheets in LAMP into Urdu.

NLDP-P has prepared documentation to support its development of LAMP and has published a well written manual of LAMP of about 250 pages which contains an introduction to DOS and CDS/ISIS. A chapter on quick start LAMP is included in the manual. A field by field guide to the LAMP databases has been provided. The manual also includes the LAMP installation procedure, General cataloguing guidelines, Rules for allotting authority codes, Sample filled-in worksheets and outputs, ISO codes for countries and languages, Backup of LAMP databases, ASCII codes, and the LAMP licensing agreement. A work book on LAMP with examples has also been prepared by NLDP-P.

PLA Computer Training Centers at five major cities of Pakistan offer regular courses on LAMP. NLDP-P has also conducted special courses for the students of library and information science at various universities in the country. LAMP demonstrations have also been arranged in all big cities of Pakistan. The University Grants Commission has recommended practical training of LAMP in the new curriculum for Masters in Library & Information Science in Pakistan.

MARKETING OF LAMP IN PAKISTAN

There are approximately four thousand libraries of various types and sizes in Pakistan. For various reasons, only a few of these are computerized or are likely to be computerized. Lack of budget is the major problem. The concept of library automation is also not clear in the minds of policy makers and library professionals. LAMP is the first library software introduced in Pakistan by the library professionals and NLDP-P is the pioneer in this field. After completion of the project period, NLDP-P handed over the software to the Pakistan Library Association (PLA) and now the PLA is responsible for the marketing of LAMP as well as for providing after sale service and further development of the software. LAMP is currently (mid-1997) being used in more than 25 libraries including six legislative libraries of the Senate, the National Assembly and the Provincial Assemblies. Some libraries successfully use LAMP on a local area network (LAN). LAMP software has also been sent (for trial) to sixty international institutions in more than 15 countries.

PLA has not yet developed a formal marketing plan for LAMP, though NLDP-P, during previous years, promoted LAMP through various activities. Therefore LAMP is not yet achieving its goals. It is necessary to develop a marketing plan for the software by fixing a suitable market mix for Pakistan as well as for other developing countries.

Market Situation in Pakistan

The market for library automation in Pakistan is tremendous and it is estimated that only 1% for all the libraries have been automated so far. With the right marketing mix this market can be tapped and since there are no serious competitors, the chance of creating a monopoly is excellent. However, the main problem is the attitude of the librarians. The majority of them do not want their libraries to be automated because they fear that it will lessen their control over the other staff as staff obtain more skills thereby reducing the librarians' authority over them. One possible competitor to LAMP is KITABDAR, a multilingual library software package which can handle data both in English and Urdu, and which has been developed and marketed by Silicon Systems (Pvt.) Ltd., Lahore and which is in use in five/six libraries in Lahore. Another competitor is a package being developed by Jaffer Brothers Limited (JBL). JBL is a private company which enjoys a good name in the market.

Market Segments

For the marketing of LAMP four major market segments can be identified:

Segment-A: This segment comprises those institutions which have high budgets, are foreign aided, and are financially strong. For example, LUMS is a financially strong university in Pakistan and its library has already purchased a foreign library software package. The American Center and British Council Libraries in Pakistan are funded by foreign governments and they too use costly imported software.

Segment-B: In this segment are the institutes of higher education, special libraries where finance is arranged locally (self financed, Govt. funded, privately funded), and which have moderate budgets. For example, university libraries, business school libraries, medical college libraries, special libraries (Punjab Assembly Library, Punjab Public Library).

Segment-C: In this segment are the libraries with low budgets and small collections of books; for example, intermediate and degree college libraries, small public and school libraries, higher secondary government schools.

Segment-D: This segment comprises libraries with very low budgets such as inter and degree college libraries of remote/rural areas and commercial institute libraries.

As the institutions of Segment 'A' have good budgets they can afford the expensive foreign software. Therefore Segment 'B' having a moderate

budget may be selected as the main target market for LAMP. By revising the market mix carefully and realistically Segments 'C' and 'D' may also be targeted.

After getting the feedback from local libraries in Pakistan and debugging the software, PLA should give attention to the marketing of LAMP in other developing countries.

Macro-Environment Situation

The Macro-environment factors which are currently influencing the marketing decision pertain to the fact that there is a growing awareness in the Pakistan about information dissemination. This is evident through the policies of the government of Pakistan which is promoting a literacy campaign as well as a technology advancement campaign. These policies are also allowing the libraries to obtain more funds thereby helping PLA's efforts.

As librarians are not highly educated in automation of their services, special attention must be given towards training of the librarians and their subordinate staff on LAMP and in computer applications generally.

A SWOT (STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS) ANALYSIS OF LAMP

Strengths

The strengths of LAMP include the following:

- It is produced by librarians at PLA/NLDP-P.
- PLA is a not-for-profit organization which will update the software according to the needs of libraries on a non commercial basis.
- PLA is a small body which can easily adapt itself to the changing environment of the market.
- With the help of expert professional librarians PLA can easily develop and maintain the software.
- The price of LAMP (at Rs.15,000) is reasonable, and PLA offers free after sales services.

Weaknesses

- LAMP still exhibits some technical faults.

- LAMP possesses all the weaknesses of its base software, i.e., CDS/ISIS. Some limitations of CDS/ISIS could not be overcome even through advanced programming.
- LAMP is also not based on any MARC format which is demanded by most of the libraries particularly in foreign countries.
- A very small budget is provided for the promotion and selling of LAMP.
- Lack of coordination between PLA Headquarters and five branches in updating and marketing of the software.

Opportunities

- Rapidly growing awareness of library automation in developing countries.
- Sheer size of data is moving libraries towards automation. The bibliographic data is becoming so huge in most libraries that it is now difficult to handle properly.
- Governmental policies for the development of information technology.
- Establishment of educational institutions in private sector causes a competitive environment. To attract the students a good automated library is felt necessary.
- Lack of many competitors.

Threats

- The largest threat is the opposing attitude of librarians towards automation.
- A possible threat may be the ever changing priorities of the government.
- Other competitors may become a threat in future as some of them are planning to provide library software free of cost.

MARKET MIX (PRODUCT, PRICE, PLACE, PROMOTION) FOR LAMP IN PAKISTAN

Product

In addition to the LAMP software, other supporting products offered by PLA include:

- A CD-ROM which includes bibliographic records of 23 libraries which have been computerized using LAMP. The databases contain

about 260,000 records and this CD-ROM may be used as a union catalog;

- Services for retrospective conversion. PLA has developed a team for classification, cataloguing, and data entry of bibliographic records.

There are some recommendations that would enhance the quality of LAMP.

- Some problems appear in the software particularly in some local environments such as different DOS versions, etc. These bugs should be eliminated and the software should be made as independent of local variations as possible;
- A video demonstration of LAMP should be prepared to reduce the fear and hesitation of librarians to use the software;
- As optional products the catalogue cards and spine labels may be prepared on continuous stationery;
- LAMP lacks the ability to handle non book materials and so should be upgraded to overcome this;
- LAMP should be divided into different modules which should be available separately;
- LAMP in the Urdu language is a great achievement and other non-roman scripts should be developed.

Price

At the moment the price of LAMP is Rs.15,000 for all types of libraries. The following recommendation are given in price setting:

- The price should be different for various market segments;
- LAMP should be divided into different modules and a modular pricing strategy should be adopted;
- Discounts should be given on early/cash payments.
- Some libraries in segments A and B may want some customization of the software. Cost of special changes may be charged separately.
- If an institution demands more training, costs for that may also be charged.

Suggested price list in Pak Rupees:

Segment A	35,000/- (Subject to the improvements in product)
Segment B	25,000/-
Segment C	15,000/-
Segment D	5,000/- (Sometimes free for promotional purposes)

Place (Distribution)

Now there are six distribution channels:

PLA Headquarters, Islamabad.

PLA Sindh Branch, Karachi.

PLA Punjab Branch, Lahore.

PLA NWFP Branch, Peshawar.

PLA Baluchistan Branch, Quetta.

PLA Federal Branch, Islamabad.

There are unlimited number of people who could become agents for distributing LAMP after passing a test devised by the PLA. PLA has also nominated individuals as agents who can distribute on the behalf of PLA. They were given 35% of the income and would be bound to provide one year after sale service.

Here are some recommendations on distributions:

- PLA should nominate large libraries as distribution channels and agents;
- PLA should hire the services of organizations dealing with the marketing of various products relating automation.

Promotion

NLDP-P has promoted LAMP in various ways:

- Sending brochures of LAMP to many libraries;
- Establishing training centers for LAMP in five cities of Pakistan;
- Conducting training courses in other big cities of Pakistan;
- Giving some copies of LAMP free of charge to big libraries in Pakistan;
- Donating 20 computers to different libraries with the LAMP software.
- Using PLA's newsletters and journals for advertisements;
- Arranging free courses on LAMP for the students of library science at various universities in the country.
- Introducing LAMP at various conferences of PLA and other professional associations;
- Providing LAMP free of charge to library schools.

For the further promotion of LAMP some proposals are given below:

- Try to promote overall automation in the libraries of Pakistan. Brochures should be sent regularly to the libraries and all members of PLA;
- Print media should be used, e.g., Newspapers, professional journals and electronic media for advertisement of LAMP;
- Articles should be published which discuss the different aspects of LAMP by members of the PLA;
- At professional conferences experts should present papers on LAMP;
- Regular stalls should be arranged at professional exhibitions and seminars;
- The representatives of the LAMP should provide authority cards;
- PLA / NLDP-P should prepare demo diskettes of the software for demonstration purposes;
- PLA should arrange free courses for every session of library science students in all universities of Pakistan;
- A LAMP user group should be established and a permanent newsletter be issued through this group.

MARKET MIX (PRODUCT, PRICE, PLACE, PROMOTION) FOR LAMP IN THE INTERNATIONAL MARKET

For various reasons Pakistan is totally isolated from the international information community. PLA, realizing this deficiency, has made extensive efforts to improve the situation by creating linkages with institutions such as UNESCO, International Federation of Library Associations & Organizations (IFLA), and the International Development Research Centre, Canada (IDRC).

For the purpose of LAMP marketing we can divide the world marke into two segments :

1. Developed Countries
2. Developing Countries

LAMP has been developed in Pakistan and it particularly fulfills the needs of the libraries in less developed countries. Therefore, in the beginning we can only target developing countries.

Product

One copy of LAMP has already been sold to the University of South Pacific in Fiji. Some other institutions from Australia, Papua New Guinea,

Chili and Syria have showed interest in purchasing LAMP. The format adopted by the software may be considered a standard for Pakistani libraries but this is not an international standard. USMARC or UNIMARC are usually accepted internationally as bibliographic standards. LAMP should be re-designed according to these standards. Some institutions from developing countries have showed interest in LAMP but they demanded international standards. Moreover, the international trend of library software is changing from DOS to Windows. LAMP should also be developed to run under other operating systems like UNIX, OS/2, and Windows.

Price

The price of LAMP in international market is US$600. This price should be negotiable in special circumstances.

Place (Distribution)

LAMP has been sold to some institutions abroad directly by NLDP-P / PLA through E-mail or ordinary mail. The problems in international marketing of LAMP include installation, proper training, after sales service, trouble shooting, etc. For distribution of the software the following may be helpful:

1. Library Associations of Developing Countries
2. National Libraries
3. Library Science Departments at Universities
4. UNESCO Regional and Country Offices
5. Other libraries/information centres which play leading role in the profession e.g. National libraries of medicine, National scientific and technical documentation centres, etc.

Promotion

Existing promotional activities of LAMP at international level include:

- Articles in professional periodicals;
- News about LAMP in professional newsletters;
- Office bearers of PLA go to international conferences, e.g., IFLA conference. Representatives from NLDP-P/PLA have participated in recent IFLA meetings and this was a good chance to introduce LAMP to the people from other countries;

- Arranging LAMP demonstrations outside Pakistan, e.g., Demonstrations were arranged at The Hague and Manchester for CDS/ISIS users groups in Netherlands and UK respectively;
- LAMP introduction on the Internet, e.g., The software was introduced on CDS/ISIS discussion list;
- Copy of the software and user manual were sent to more than sixty institutions world wide which are doing research in the field of library and information science.

The following measures are recommended for further international promotion of LAMP:

- More articles and news should be published in the professional periodicals;
- PLA should open a home page on Internet for LAMP where, along with the information, a demonstration version of the software should be available;
- Library Associations of developing countries should directly be contacted for promotion and distribution purposes;
- If the budget allows, demonstration/training courses may be arranged in other countries.

CONCLUSION

Library software development and its selling in developing countries is not easy. Implementing the principles of marketing, software developing companies can fulfill automation needs of libraries. These principles include analyzing market situation, SWOT analysis, and setting a good market mix. Professional associations of librarians and information scientists in developing countries can play a vital role in this respect. To fill the gap between information rich and information poor societies, information technology should be promoted in developing countries. Advanced countries should provide funds in this field.

FURTHER READING

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3. Alan Hopkinson. CDS/ISIS Information: CD-ROM Using CDS/ISIS. *Information Development*, vol. 12, 1996, pp 203-204.

4. Khalid Mahmood. Do You Need a Lamp to Enlighten Your Library? an Introduction to Library Automation and Management Program (LAMP). *INFOISIS*, vol. 2, no. 1, 1996, pp.7-16.

Online Public Access Catalogue (OPAC) at Department of Library Science*

OPAC: AN INTRODUCTION

Online public access catalogue is the most modern physical form of catalogue. It is defined as 'A database of bibliographic records describing the holdings usually of one particular library.' It allows searching by name, title and subject and offers online access through computer terminals for public use. OPACs were developed in the late 1970s and since then have become widely accepted as the contemporary form of catalogue in the developed world. Since their advent, vast number of bibliographic records have been converted into computer format although public use of catalogues was often still in printed form, by cards, or in microform. A number of major US libraries pioneered online access and developed the first online catalogues. Gradually, bibliographic agencies, cooperatives and commercial companies developed library automation systems that included online public access catalogues. During the 1980s, most academic libraries and an increasing number of public libraries, (especially in the US, the UK, Australia and Europe) have installed online catalogues.

In Pakistan, the concept of OPACs was introduced in late 1980s. Lahore University of Management Sciences was one of its pioneers in the country. During last ten years a significant number of Pakistani libraries have started automation projects and the area that is mostly being computerized is the preparation of catalogues.

WHY PREFER OPAC TO CARD CATALOGUE?

Online public access catalogue is preferred to traditional card catalogue for the following reasons:

Capacity Computer can process much more information than would be possible manually. It reduces the space covered by the catalogue.

Speed Computer can search required bibliographic records much faster and more accurately than a person can on a manual card catalogue.

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* Source: "Online Public Access Catalogue (OPAC) at Department of Library Science." *Pakistani Librarian*, vol. 3 (1997): 39-47.

Up to Date OPAC records are normally more up to date than a card catalogue.

Variety of Search New access points are available for searching which are not possible on a card catalogue, e.g., Publisher, Call no., ISBN, etc.

Variety of Display Searched records can be displayed in a variety of ways, e.g., Main entry format, short format, bibliographic style, etc.

Portable Bibliographic information on OPAC can be searched and used any where. One can also use it outside the library.

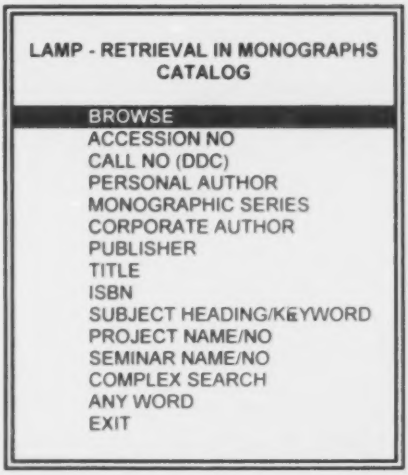
OPAC AT DLS

In 1990 the Department of Library Science, University of the Punjab got a donation from Punjab Library Foundation for the establishment of a computer laboratory. To introduce the students of library science with the concept of library automation some machines were purchased. This hardware was too insufficient to automate the departmental library. In 1994 Netherlands Library Development Project (NLDP) donated a computer with LAMP software to the Department. Having these resources it was decided to automate the departmental library and the data entry work was started in 1994. In September 1996, at the beginning of new academic session, the online public access catalogue (OPAC) was made available for the use of faculty, students and other users of the library. A microcomputer IBM Compatible 386 with a dot-matrix printer has been provided to the library. However overall cataloguing work is done on the system but most of the time the OPAC is available for public use. The work of retrospective conversion is almost complete now. Due to power failure, system failure and some other unexpected problems it was decided that card catalogue would be continuously maintained at the same time. To help the users in searching in OPAC a manual was also written by the author.

SEARCHING IN OPAC

After booting up the system and when the password is keyed in, the main menu of OPAC displays. At this menu a bar in reverse mode appears on one of the options. At the bottom of the menu the function of the option appears. To select another option this bar can be moved by pressing up or down arrow keys. To activate an option just press enter key while having the

bar on that option. The detail of important access points and the method of searching them are given below.



ALL THE RECORDS OF THE BOOKS FOR A GIVEN RANGE OF MFNs

Browsing Records

On selection of option BROWSE the following message displays:

Total records are 2602

Enter First MFN :
Enter Last MFN :

One can search and browse records according to their Master File Number (MFN) in the database. A range of MFNs can be entered within the maximum limit of the total records. For example to browse first 100 records, 1 can be entered as first MFN and 100 as last MFN. To search a single record the same number should be entered as first and last MFN.

Call No. (DDC)

DDC Class number and Author mark (First three characters of main entry heading) should be separated by *. e.g., To search Dewey Decimal Classification, the following will be the command structure:

025 431 * DEW

Personal Author

Full name (as entered in database) or a part of the name may be searched, e.g., To search the author name Sadiq Ali Khan, the command will be one of the following:

ALI
KHAN
KHAN, SADIQ ALI
SADIQ

Corporate Author

When corporate body works as author, it may be searched by its name, a word from name, or code. For example, to search American Library Association, following will be the valid search expressions:

ALACO *(Code)*
AMERICAN
AMERICAN LIBRARY ASSOCIATION
ASSOCIATION
LIBRARY

Title

Title or sub-title of a monograph may be searched by entering first 30 characters or any single word. For example, to search the title Education of the user of information in Pakistan, one of the following search expressions should be entered:

EDUCATION
EDUCATION OF THE USER OF INFOR
INFORMATION
PAKISTAN
USER

Articles, prepositions, etc. are not searchable terms, e.g., in this title the words in, of , and the.

Complex Search

This option enables a user to formulate a search expression by using any combination of different fields. On the selection of this option, the following set of fields will appear on the screen. A user may utilize any or all of these fields to formulate the search expression.

COMPLEX SEARCH

Title/Sub-title
Author
Corporate Author
Subject/Keyword
Year of publication
Series

Any Word

With this option a user may search any word in any field in the database. After selection, the following message will appear:

Dictionary list **Data Base Name: NBDB**

Key :

All the indexed terms are arranged in the form of a dictionary. The system requires a key to open the dictionary at a certain point. For example by entering the word Pakistan the first letter of opened page of the dictionary will be PAKISTAN.

Dictionary list **Data Base Name: NBDB**

PAKISTAN	PAKSITAN COPYRIGHT LAWS
PAKISTAN BOOK TRADE DIRECTORY	PAL
PAKISTAN COPYRIGHT LAWS-MANUAL	PALMER
PAKISTAN LIBRARIANSHIP	PALMER, B. I.
PAKISTAN LIBRARIANSHIP 1963-64	PALMER, RICHARD PHILLIPS
PAKISTAN LIBRARY ASSOCIATION	PAMELA
PAKISTAN LIBRARY ASSOCIATION-N	PAMPHLETS
PAKISTAN LIBRARY RESOURCES	PAN
PAKISTAN NATIONAL SCIENTIFIC A	PANDA
PAKISTAN PLANNING COMMISSION	PANDA, B. D.
PAKISTAN SCIENTIFIC AND TECHNO	PANDA,B.D.
PAKISTAN YEAR BOOK	PANDA B.D.
PAKISTAN-LIBRARIES	PANID
PAKISTAN. MINISTRY OF EDUCATIO	PANIZZI
PAKISTANI	PANIZZI'S RULES
PAKISTANI KUTTAB KHANU KAE LIY	PANJAB
PAKISTANI SERIALS	PANJAB UNIVERSITY

Key : PAKISTAN

By pressing arrow keys a user can move within the dictionary. To select a term for searching press 'S' while the cursor blinks on the term, and then 'X' to exit the dictionary. Search expression will be displayed. At this stage the expression may be edited.

Search expression

Pakistan

ADVANCED SEARCHING TECHNIQUES

Field Directed Search

Searching of a term from a field is called field directed search. In this kind of search, tag number of the field is also suffixed with the search term. The procedure is given below:

Term/(Tag number)

For example, to search the term COMPUTER from the title field (Title field tag is 41):

COMPUTER/(41)

A tag list of LAMP database is given below.

2	Accession Number	44	Edition
3	Classification No	46	ISBN
4	Author Mark	47	Language(s) of Text
5	Author-1	48	Total Number of Copies
6	Role	49	Library section
7	Author-2	61	Publisher Code
8	Role	65	Date of Publication
9	Author-3	66	Pages or Volumes
10	Role	67	Description (Illustration)
11	Statement of responsibility	81	Subject Headings
12	Type of Document	82	Notes
31	Corporate Author (Org. Code)	85	Key words
41	Title	101	Title(Monograph Series)
42	Sub-title	102	Vol. / No.
43	Document No	162	Date Record Created

Right Truncation of Terms

Instead of specifying a precise search term, one may just give a root. This technique, referred to as root searching or right truncation. This allows to search on leading sequences of characters. Right truncation is indicated by placing a dollar sign ($) immediately after the last root character, for example, if one types the following search command:

LIBRAR$

He/she will find all terms starting from the characters LIBRAR, e.g.,

LIBRARIANSHIP
LIBRARIES
LIBRARY
LIBRARY AUTOMATION
LIBRARY SCIENCE

Combining Terms Through Boolean Operators

You may combine two or more search terms by using Boolean operators (or Logical operators). These operators indicate the intended relationship between the terms. There are three basic operators:

a. Logical OR

The logical OR is the class union operator. If A and B are two terms, representing the two classes of documents indexed with terms A and B respectively, the logical OR between these two classes is the class of documents indexed with term A or B or both. The logical OR, therefore, is used to broaden the scope of the search and will, in general, increase the number of hits. The symbol used to indicate the logical OR operation is the plus sign (+).

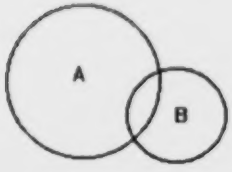
b. Logical AND

The logical AND is the class intersection operator. In the same case of terms A and B, the logical AND between the two classes is the class of documents indexed simultaneously with the both A and B. The symbol used to indicate the logical AND operation is the asterisk (*).

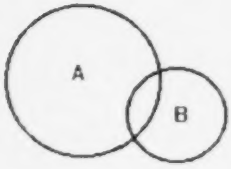
c. Logical NOT

The logical NOT is the class exclusion operator. Between A and B, the logical NOT is the class of documents indexed with term A but not simultaneously with term B. The symbol used to indicate the logical NOT operation is the caret sign (^).

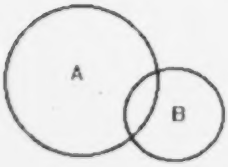
BOOLEAN OPERATORS



A *OR* B (A + B)



A *AND* B (A * B)



A *NOT* B (A ^ B)

DISPLAY OF RECORDS

OPAC displays the records in a user friendly way. After the searching is completed, the system shows the number of searched records and then displays one of them as under:

Page 1/ 1

Record No 000612	
Processing Status	Catalogued
Accession No(s)	3530, 3531, 3532, 3533, 3534
Call No. DDC	020 5491 KHA
Author(s)	Khan, Sadiq Ali
Title	Educational institutions and library development in Pakistan
Number of Copies	5
No. of copies issued	0
Imprint	Karachi : Khurshid Nishan, 1994
Collation	326 p.
Subject headings	LIBRARY EDUCATION-PAKISTAN, LIBRARY AND INFORMATION SCIENCE-PAKISTAN, ACADEMIC LIBRARIES-PAKISTAN, LIBRARY DEVELOPMENT-PAKISTAN

X Exit N Next Record P Previous Record 1 First Record T Last Record
W Print this record A Print All Records
S Save this record Z Save All Records F Change Format M Short Display

Various Display Formats

OPAC displays the record with full cataloguing information by default. By pressing 'F' from the menu at the bottom, the following three format options will display:

1. Full Cataloging Information
2. Main Card (Author Card)
3. Bibliographic Format

A sample of main card display is as under:

020.5491
KHA Khan, Sadiq Ali
Educational institutions and library development in Pakistan / Sadiq Ali Khan. -- Karachi : Khurshid Nishan, 1994
326 p.

1. LIBRARY EDUCATION-PAKISTAN 2. LIBRARY AND INFORMATION SCIENCE-PAKISTAN 3. ACADEMIC LIBRARIES-PAKISTAN 4. LIBRARY DEVELOPMENT-PAKISTAN I. Title

3530,3531,3532,3533,3534

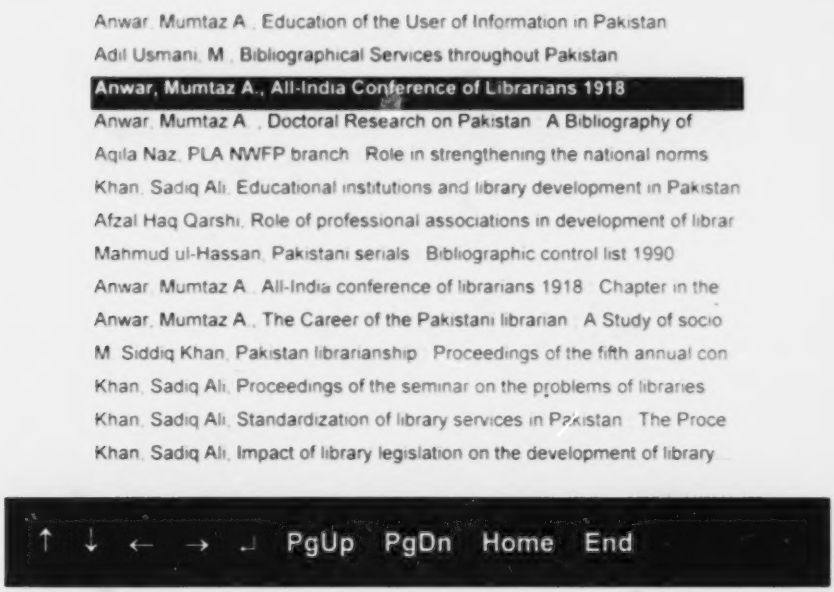
A sample record in bibliographic format is given below:

Khan, Sadiq Ali, Educational institutions and library development in Pakistan. Karachi, Khurshid Nishan, 1994.

Short Display

By pressing 'M' the searched records will be displayed in short format. Only author and first few words of title are shown in this format. A menu is given at the bottom for the movement of selection bar. Just move the bar and press enter to see the full record of a title.

BEST COPY AVAILABLE


Anwar, Mumtaz A., Education of the User of Information in Pakistan
Adil Usmani, M., Bibliographical Services throughout Pakistan
Anwar, Mumtaz A., All-India Conference of Librarians 1918
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M. Siddiq Khan, Pakistan librarianship: Proceedings of the fifth annual con
Khan, Sadiq Ali, Proceedings of the seminar on the problems of libraries
Khan, Sadiq Ali, Standardization of library services in Pakistan: The Proce
Khan, Sadiq Ali, Impact of library legislation on the development of library
↑ ↓ ← → ↵ PgUp PgDn Home End

Printing & Saving Records

Searched record may be printed in full or one by one. The records may also be saved on the disk for later modifications and beautification in a word-processor. The records are printed or saved in a format which have already been selected for display.

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Information Technology Education in Pakistani Library Schools*

LIBRARY EDUCATION IN PAKISTAN

The history of library education in Pakistan can be traced from 1915, when American librarian, Asa Don Dickinson, organized a library training class at Punjab University, Lahore. This was the first library training class founded on the Indian subcontinent. Actually it was the first formal library school organized in all of in Asia, as the next formal program was organized at Boon University in China around 1920. It is interesting to note that University of London didn't start its library school until 1918.

Dickinson's course taught modern library methods to working librarians. His first class consisted of 30 students, drawn from the staff of the libraries of the university and the local colleges. The educational qualifications of the class varied from Honors in Oriental languages to the bachelor of arts, and from matriculation (secondary school certificate) to non-matriculation. Dickinson's curriculum included classification, cataloguing, bibliography and book selection, library administration, and viva voce, i.e. oral examination. The course was suspended during the two years following Dickinson's departure in 1916 and was re-instituted in 1918. In 1921 Lala Labhu Ram, a pupil of Dickinson, enlarged the syllabus to include seventy-two lectures instead of the original twenty-five. After 1928 only bachelor's degree holders were admitted to the class, and in 1930, the study of either German or French became compulsory.[1]

Although library training was started in 1915, no training facilities existed when Pakistan came into being in 1947. The regional library associations started short term certificate courses to meet immediate needs. The University of Karachi took the lead and started a post graduate diploma course in 1956. Other universities soon followed suit. The first master's degree in library science was also started by the University of Karachi in 1962. Punjab University started a diploma program in 1959 and a master's degree program in 1974. Peshawar University started a diploma program in 1962 and a master's degree program in 1982. Sind University started a diploma program in 1970 and a master's degree program in 1973.

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* Source: "Information Technology Education in Pakistani Library Schools." *Journal of Education for Library and Information Science*, vol. 38, no. 3 (Summer 1997): 200-210.

Balochistan University, Quetta and Islamia University, Bahawalpur started their post graduate library education programs in 1982 and 1983 respectively.

At present, six Pakistani universities offer post graduate courses in library and information science (LIS). Three other universities are planning to start LIS education at the post graduate level: University of Azad Jammu & Kashmir, Muzaffarabad; Allama Iqbal Open University, Islamabad; and Gomal University, Dera Ismail Khan. The admission requirement for a one year diploma program is a bachelor's degree. The diploma is required for the one year master's degree. Karachi and Sind Universities offer these courses in a semester system. The contents of their courses are divided into small components. The other four universities award diploma and master's degrees on an annual examination basis. Their course contents are divided into five or six papers. A thesis is also an option for master's students, but it is not compulsory. Some universities also include oral components in their annual examinations.

WHY IT EDUCATION IS NECESSARY IN PAKISTAN

Information technology education in Pakistani library and information schools is necessary because:

1. The computer has proved its efficiency in the fields of librarianship and information services. It is being used in all library housekeeping routines, such as acquisition, cataloguing, circulation and serials control. The computer provides speed and accuracy in all information services. Using computers, a librarian – without employing new staff – can easily initiate many new services, including selective dissemination of information (SDI) and current awareness service (CAS). Optical disk technology has revolutionized the mass storage and retrieval of information. Multi-volume encyclopedias can be stored on a small disk less than five inches in diameter. Many publishers have started electronic publications on various scientific and technological subjects. Libraries and information centers in developed countries fully enjoy the benefits of new information technology, and with its help they provide better services to their patrons. Library literature published in developed countries is replete with descriptions and experiences of the application of information technology in libraries. Awareness of library automation increases day by day. This advancement naturally affects developing countries like Pakistan.
2. Computer technology is becoming less expensive. The invention of the microcomputer and advances in silicon chip technology have made

computers more accessible. Even small libraries in developing countries can procure an IBM compatible microcomputer.

3. Computerized telecommunication is a trend in Pakistan. The Internet, starting in Karachi, has spread to other big cities. There are more than a hundred e-mail providers in various cities of Pakistan and thousands of e-mail users in the country. A number of educational institutions have access to the Internet. Pakistan Telecommunication Corporation (PTC) has started to provide ISDN connections.
4. There is an increase in computer literacy in Pakistan. A number of private institutions have offered education in computer hardware and software for many years. Many universities offer master's degrees in computer science. Computer education is one of the priorities of the present government. The government is taking steps to introduce computer courses in intermediate colleges and polytechnics in the public sector. There are many hardware vendors in big cities, and the system development business is also getting stronger.
5. During the last few years, there has been a trend toward privatization of education in Pakistan. Many educational institutions have been established at the post graduate level. The major subject areas include: business administration, management, law, education, and medicine. Operating in a competitive environment, these institutions have to provide better services to their clients, i.e., students. Although their libraries do not have large collections, they still prefer to automate them. During the last six years, these institutions have provided significant employment for library school graduates. During their interviews for employment in private organizations, new graduates from library schools were always asked about their training in library automation.
6. Though professional librarians are not responsible for writing the computer programs for the automated systems in their libraries, they have to orient programmers about the needs, requirements, and routines of library services. In the past, it was felt that senior librarians were unable to help the system development teams that were automating their libraries. As a result, many flaws can be seen in systems developed locally. This was due to a lack of training of librarians in automation.

This paper examines the state of the art of IT education in the library schools of Pakistan and suggests some steps for starting IT education with existing resources. The term 'library schools' refers to the library and information science departments at the six Pakistani universities that offer post graduate LIS education.

CURRICULUM

A good educational program has a strong curriculum as the basis of all activities. The curriculum of library schools should be revised to cater to the emerging needs of libraries and information centers in the country. Unfortunately, in the past, the library science curriculum in Pakistan had not done this. The component of information science was first included in library curriculum in Pakistan in the 1970s. A basic introduction to computer usage in information handling activities was given to master's students in the information science course. This situation has remained the same until the present day. During the last six years some efforts to revise the curriculum were made by the Lahore school and the University Grants Commission (U.G.C.), but the new curriculum could not be implemented.

In April 1995, a curriculum revision meeting in LIS programs was held at the UGC, Islamabad. The meeting was attended by the representatives of all the country's library schools. In this meeting a new curriculum was finalized and later issued by the U.G.C.[3] The curriculum merges diploma and master's programs into a two-year LIS master's program. One of the objectives of the curriculum is:

> 'To develop understanding among the students about the application of information technology for efficient organization, storage and retrieval of information.'

The new curriculum contains, for the first time, contemporary IT components in different courses. Besides traditional content, the curriculum includes:

- Fundamentals of computerized information storage, retrieval and dissemination
- Introduction to computer hardware and software
- Telecommunications
- CD-ROM (Technology and databases)
- Networking (LAN and WAN)
- Electronic mail, bulletin boards and the Internet
- Machine-readable databases
- Use of microcomputers in libraries
- Database design and maintenance
- MARC, UNIMARC, ISBD, CCF
- Management Information Systems (MIS)
- Automated serials management
- Marketing of information products and services

Almost all IT aspects have been included in the curriculum. However, there is no mention of how many working hours will be devoted to instruction in IT theory and how many to practical, hands-on training. There should be a division between theory and practice, and both should receive adequate attention.

FACULTY

Who will teach IT? This is an important question, because without qualified faculty, IT training in Pakistan will not be possible. At present there are three types of IT experts: Computer science teachers, working librarians, and library school faculty.

Computer Science Teachers

There are a large number of experts who teach computer science. Many universities and other institutions offer regular courses in various aspects of computer science. These programs range from four-week short courses to master's degrees. An increasing number of business schools in the country are also producing computer experts. However, in teaching IT to librarians, these individuals may not be effective. Although they have vast experience in applying IT in the fields of industry, finance and business, they often have no experience in library applications. Nevertheless, they can teach librarians some IT components of a general nature.

Working Librarians

Though few in number, there are people who already have a knowledge of IT applications in libraries. Some of them have foreign LIS degrees and learned about IT at library schools in Europe and the United States. Some attended short courses inside and outside the country and also have experience in IT application in their libraries. These individuals are, for the most part, working in special libraries in Pakistan. Some librarians have been working in Middle East countries for several years and also have experience in working in an IT environment.

Library School Faculty

According to a survey conducted by Sajjad ur Rehman, there are 44 academic positions in six library schools in the country, out of which 34 are filled.[4] Of thirty-four teachers, four have their master's degree or doctorate from abroad and are familiar with IT. At present, two teachers (one each from Bahawalpur and Quetta) are studying in Western countries. Not all, but

many of the library school teachers are familiar with the use of IT in libraries. For instance, at the Lahore school, six of seven faculty members have attended various courses on IT. Five teachers (from Lahore, Peshawar and Quetta) have attended the Postgraduate Library Management course at the Hague (Netherlands), where they were extensively trained in using IT in libraries. In the past, teachers from library schools attended various IT courses offered by professional associations and/or foreign missions in Pakistan. Some of them also participated as resource personnel in IT-related courses.

In addition to these three categories of IT teachers, others occasionally train Pakistani librarians in using IT. These include Pakistanis who are working in advanced countries. Upon their return home, they participate as resource personnel in various courses arranged by professional associations. Others are foreign experts who work with foreign missions. They deliver special lectures on IT aspects in library schools, and in the meetings and seminars of the professional library associations.

In the new curriculum, the UGC recommended teachers' training courses. The Curriculum Review Committee suggested a one-month library automation course including Library Automation & Management Program, CDS-ISIS (software for bibliographic records developed by UNESCO), Database design, CD-ROM, E-mail/Internet, Multimedia, and LAN/WAN. It was suggested that at least two teachers from each school should attend this course. The course should be conducted by the UGC. A one-week workshop per year was also suggested on cataloguing and classification. Machine readable cataloguing (MARC) concepts will be included in this workshop.

It is felt that this training will take considerable time. In the beginning, IT courses can be started in all library schools with working librarians and computer science teachers acting as visiting faculty. This option is presently included in the library schools' budget. Guest lectures by experts can also be arranged. The Association of Pakistan Library Schools should also become active, as it will be useful for coordinating training activities for LIS teachers.

TEACHING METHODS

Teaching methods play an important role in the learning process of students. According to Danton, the following eight methods – either singly or in combination with other methods – are applicable to one or more subjects in library science: lecture, class discussion, seminar method, laboratory work, practical work, problems, papers and bibliographies, field trips.[5] Pakistani library schools predominantly use lecture, discussion, seminar, and practical

work. In addition, visits to important libraries are considered necessary. In the new curriculum, 20 percent of the work on assignments has been recommended. Students will write papers and prepare bibliographies. In all large cities there are libraries using new information technologies. Library schools should arrange visits to automated libraries. There should be an internship for at least two months duration in an automated library. The internship should be made compulsory for the completion of the degree. Students should also be encouraged to attend seminars and lectures arranged by professional associations. For master's students, there is a provision for research in each library school's curriculum. The students should be encouraged to do research on IT topics.

HARDWARE FACILITIES

For effective IT training, a well-equipped computer laboratory is indispensable in each library school. The existing situation regarding computer hardware is very poor. The school in Karachi was the first to have a computer, followed by the school in Peshawar. The Punjab Library Foundation awarded a grant of Rs.200,000 (US$6,000) for the establishment of a computer lab in Punjab University's library science department. Punjab University used the grant to purchase four personal computers and a printer. The Netherlands Library Development Project (NLDP) also gave a PC with printer to each library school. NLDP donated a CD-ROM drive with Sound Blaster to each department. Now each library school has about approximately two or three computers. Lahore and Peshawar schools also have e-mail capabilities. However, the hardware and facilities are still insufficient for a class of about a hundred students at each school.

In the new curriculum, a computer lab with the following equipment has been recommended: eleven personal computers, un-interrupted power supply (UPS), data-show, overhead projector, air conditioners, heaters, white board, vinyl flooring, tables and chairs, LAN system, tape back-up, e-mail, etc.

Considerable money is needed to establish such a computer lab. This will take some time, but by adopting the following strategy, IT training can be started without wasting further time. IT programs at library schools should be divided into two parts: core courses and advanced courses.

Core Courses

These courses should be compulsory for each master's degree student. They may include: fundamentals of the computer, operating systems, word-processing, spreadsheets, database management, integrated library software

management, basics of on-line searching, and use of CD-ROM databases. Hardware for these courses may be acquired in the following ways:

1. All six universities have computer science departments with well-equipped computer labs. For the basic practical training in the above concepts, a computer lab is needed only for approximately one month during an academic year. Library schools may use the computer labs of the computer science departments during vacations or in the evening hours.
2. At four cities (Lahore, Karachi, Peshawar and Quetta), computer centers have been developed by the Pakistan Library Association (PLA) in order to train working librarians as well as library science students. The PLA's computer labs may be scheduled at no charge for a specific period. This has been successfully utilized at the Lahore center, and can be arranged during vacations. It is not difficult for the students to attend the practical sessions at the PLA centers for a period of less than one month.

Advanced Courses

These should be offered as optional courses. Only those students who have a special interest in, and aptitude with, the implementation of IT in libraries should be allowed to select these subjects. They may include: advanced library database management, telecommunications, networking, e-mail and the Internet, and MIS. In the case of these subjects, regular practical sessions will be necessary. For a limited number of students, computer hardware already available at the schools, with minor additions, is satisfactory.

SOFTWARE

Software is another important aspect of IT education. Two types of software packages are used in libraries: general office software and library software.

General Office Software

These types of software packages are used in all institutions, and a wide variety is available. The LIS students should have experience in using these packages. The availability of general office software in Pakistan is not a problem. This software includes:

- Operating systems, e.g., DOS, UNIX, etc.

- Database management systems, e.g., dBase, Foxpro, MS-Access, etc.
- Word-processing, e.g., Word Star, MS-Word, Word Perfect, etc.
- Spreadsheet management, e.g., Lotus-123, Quattro-pro, MS-Excel
- Other packages for desktop publishing

Library Software

This software is used for library housekeeping routines and information storage and retrieval services. We can divide library software used in Pakistani libraries in two categories: foreign library software and locally developed library software.

Foreign Library Software

A number of libraries in Pakistan developed their in-house library databases using dBase and Foxpro. These database management systems are not meant specifically for libraries. They do not have variable length fields and repeatable fields, which are necessary for any bibliographic database. Therefore, they are not suitable for library applications. Some agricultural libraries use INMAGIC. This system is good for libraries, but is too expensive to be affordable for Pakistani libraries. A large number of libraries are working on CDS/ISIS, which is software developed by UNESCO and available free of cost. It is good for bibliographic data handling, but is not suitable for other managerial routines of a library. Other libraries are also using library packages developed in advanced countries, but they are much too expensive.

Locally Developed Library Software

Some attempts have been made to develop library application software in Pakistan. The KITABDAR, developed by Silicon Systems Ltd., is currently being used in five libraries in Lahore. It is the first Urdu library software in the country. The library Automation & Management Program (LAMP) was designed by the Netherlands Library Development Project (NLDP) in collaboration with the Pakistan Library Association. LAMP was developed in CDS/ISIS using the PASCAL advanced programming facility. It can handle the following library routines:

- Acquisitions (budget control, ordering routines, payments records)
- Cataloguing (bibliographic information, printing cards, printing bibliographies and spine labels, searching)

- Circulation (borrowers' records, check-in and check-out of books, reservations, calculation of fines)
- Selective Dissemination of Information (SDI)
- Serials Control (acquisition and cataloguing of serials, holding lists)
- Authority Files (publishers, subjects and name authorities for both serials and monographs)
- Management Reports (Statistical reports in all modules)
- Utilities (data exchange, spell check, duplication check, shelving control, accession register)[6]

LAMP is being used in more than twenty-five libraries, including six legislative libraries of the Senate, and national and provincial assemblies. The software is also available in Urdu.

It is suggested that each library school maintain its own software library. Software vendors will be asked to give a sample copy of their programs for teaching purposes. The students should be provided the opportunity to do comparative studies of library applications developed in the country, as well as of advanced applications.

CONTINUING EDUCATION

Continuing education is the way to keep working professionals abreast of the latest advances in IT. In the past, library schools took part in various activities to familiarize working librarians with new concepts and practices in the profession. Library schools in Pakistan are involved in continuing education in the following ways: through alumni associations, by publishing magazines and newsletters, by offering workshops and training courses, and by conducting conferences, seminars and lectures.

Alumni Associations

Historically, the alumni association of the Karachi school has been very active in professional matters. The Punjab University Library Science Alumni Association (PULSAA) was revived in 1988. It is an active body offering professionals various opportunities for continuing education. Teachers from various schools also take part in the activities of the Pakistan Library Association. Many activities are held in the office of the PLA headquarters or provincial branches.

Magazines/Newsletters

Magazines and newsletters are another source for professionals to learn of new concepts and activities. PULSAA publishes a quarterly newsletter.

The Lahore library school has started an annual magazine called Pakistani Librarian. The Bahawalpur library school also plans to publish a journal entitled Informag. In these newsletters and magazines, students, teachers, and working librarians write informative articles on aspects of LIS, including IT. Library school teachers also write for the professional journals published inside the country or at the international level.

Workshops/Training Courses

Library schools conduct various courses on IT applications. With the help of PULSAA, Punjab University's Department of Library Science conducted four courses on the use of computers in libraries, CDS-ISIS, and other aspects of library automation. The library school at Peshawar also conducted a workshop on library automation. Proceedings of this workshop have been published. The Bahawalpur school conducted a course, with financial help of NLDP, on "automated technical services in libraries." Three lecturers from the other three library schools were the resource persons. The course was attended by 70 professional librarians and LIS students. Teachers from different library schools also teach at the PLA Computer Training Centers.

Conferences/Seminars/Lectures

Library schools in Pakistan also take an active role in holding seminars, conferences, and lectures on IT. With the help of PULSAA, the Lahore school arranged various seminars and lectures on CD-ROM, networking and other aspects of IT. In 1994, the PLA held a conference on the theme "Information Technology in Pakistan: Potentials and Prospects." Library school teachers and others presented papers at the conference.

There are thousands of librarians working in the country. The continuing education activities are not sufficient to fulfill the IT needs. There is no financial support for such activities from the government. At times government departments, such as the Directorate of Public Libraries or the Ministry of Education, conduct courses, but without collaboration from the library schools. Educators from LIS departments should be consulted in the planning and arrangement of effective courses and seminars. The overall role of the library schools in continuing education has been poor. The schools should give attention to this aspect of library education and should include courses for working professionals in their regular annual plans. Professional associations should also make stronger liaisons with the library schools.

DOCUMENTATION

The provision of written material is always essential in an educational program. Books on IT can be divided into two groups: imported IT books and locally written books.

Imported IT Books

All Pakistani library schools have their own libraries. Although there has been less attention on training in IT during the past few years, teachers have recommended books on the subject for their departmental libraries. The libraries of all library schools have a good collection of books on IT applications in libraries. These books are mainly published in the United States, the United Kingdom, and India. There are also IT books in the university central libraries and public libraries.

Locally Written Books

Though international trade books on IT are good for students and teachers, locally written books are always needed. Pakistan badly lacks books on local IT. There are a few efforts in this area. Muhammad Riaz has written a book on library automation, and the Peshawar library school published a book entitled Challenges in Automating the Library Services. Some relevant articles have also been published in other library literature in the country. System suppliers provide user manuals, e.g., LAMP and KITABDAR. However, these manuals are much too detailed and not suitable for widespread distribution.

The level of materials should be oriented to students of IT. Theoretical aspects of IT should be explained in Urdu. For practical purposes, short notes should be prepared to explain the use of library software. In this respect, UGC may play an important role. Library school teachers and other IT experts should be encouraged to write books based on syllabi of the library schools.

EVER CHANGING TECHNOLOGY

Information technology, as Rowley notes, is changing rapidly, and new developments require more attention.[7] The Pakistan government started the introduction of computer technology in secondary schools and technical colleges. In the future, students entering higher education will be expected to have a sound IT knowledge. A computer is coming to every-one's home. New user-friendly software packages are appearing in the market. Libraries are involved in networking and the Internet. Library schools will have to

cater to the changing needs of libraries. Educators will have to develop resources to upgrade existing hardware and software facilities. There should be a rapid change in the curriculum. This requires the continuous attention of the faculty.

CONCLUSION

Information technology has a bright future in Pakistani libraries. To cater to the IT needs of librarians, Pakistani library schools must face this challenge. As IT education is mainly based on practical work that requires a large amount of money, economically challenged library schools in Pakistan experience great difficulty in implementing IT education. The only satisfactory aspect of IT education is the revision of curriculum that has recently been done in the country. In other areas, such as faculty development, provision of hardware and software, and preparation of textbooks, library schools have much work to do. In this regard, the Pakistan government (through various agencies like the Ministry of Education, the Department of Libraries, the UGC, etc.) and professional associations of librarians and information scientists should help library schools. Professionals working in the computer science field may also be helpful.

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The Technology Challenge and Continuing Education for Pakistani Librarians*

INFORMATION TECHNOLOGY: A CHALLENGE FOR LIBRARIANS

I begin with an assumption from general systems theory: that libraries and information services – and the people who design and manage them – are not alone in the universe. They are part of the wider society and are affected by the changes taking place there. Every time there has been a spurt forward in technology. Technological advancement has tremendously improved man's life and the services available to him. This is an era of 'information explosion.' There is an exponential growth in information. The Library of Congress requires 3.5 kilometers of new book shelving every year to accommodate all the new publications. It has also been estimated that the total of mankind's published material doubles every three years.[1] Mankind needs technology to help in navigating through this growing field of information. Technology is categorized into low, medium and high, with low technology being things like blackboards, charts and pictures; medium technology includes projected media slides, film strips and motion pictures; while high technology comprises computers and their applications. High technology is sometimes referred to as modern technology has had a great impact in the fields of librarianship and information handling.

Early computers, large, slow, and used primarily for numerical calculation, were built up just before World War II. General purpose computers were not available until some twenty years later. During a short span of time there has been a quantum growth in the use of computers. In 1960, there were fewer than 50,000 computers installed around the world. Today, more than 50,000 computers are sold every day. In 1975, there were more than 500,000 computers installed worldwide. Today, there are more than 15 million.[2] There has also been an extraordinary growth in communication networks. The Internet, developed from research-related university and government communications systems, is now doubling in size each year, reaching two million hosts in July 1997.[3] Commercial networks have also proliferated. It is estimated that, at the end of this decade, internetworks will link several hundred million computers together, and the

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* Source: "The Technology Challenge and Continuing Education for Pakistani Librarians." *Information Development*, vol. 14, no. 2 (June 1998): 84-90.

total number of users with access to the global electronic information matrix will exceed 500 million.[4]

In advanced countries, new technological developments have heavily affected libraries. Almost every function carried out in a library has been altered to some extent by advances in electronics, computerization, and telecommunications. The manner in which libraries process, store, and retrieve information is changing, as is the information medium itself. Today's libraries are in transition from manual to electronic systems. Databases are replacing card catalogs and printed indexes. Information is being produced and stored in new forms. The merger of computers and printing is leading to a new method of information transfer.[5] .

In the 1960s computers were seen as a practical alternative for managing proliferating library collections and increasing service demands. Certain libraries began automating some of their more routine functions during the early 1960s. The MARC (Machine-Readable Cataloging) system began in 1965 at the Library of Congress. MARC is often considered the most significant development in the history of library automation. It was developed to define a standard format for machine readable catalog records that could be used interchangeably on different types of computers across the United States. Today, the MARC format has been adopted by most of the world. The establishment of shared computerized library networks has permitted libraries to use machine-readable cataloging done by other libraries, as well as to submit their own cataloging to the networks.[6] OCLC, the world's largest library network, links more than 25,000 libraries in sixty-three countries. Its union catalog contains 36 million records representing 370 different languages. The catalog grows by approximately 2 million records each year. OCLC offers its members more than sixty different databases to search.[7] The development of on-line public access catalogs (OPACs) enables library users to obtain bibliographic information without resorting to time-consuming manual card catalogs. A number of writers have used the term "electronic library" to describe the changes libraries are experiencing as a result of new technologies. Print-on-paper communication is rapidly giving way to electronic communications. Optical disks (e.g., CD-ROMs) are becoming popular as mass storage media. Briscoe feels the shift in publishing from print to electronic media is due to "1) rising costs of book and journal manufacturing; 2) need to decrease the time required for publishing; 3) need to control and provide access to ever increasing amounts of data and information; and 4) recognition of some unique and special attributes of electronic media (e.g., interaction between the user and the information system; Boolean search logic, continuous updating and

exponential graphic displays including superimpositions, movement, 3-diemnsional rotation, and variable colors).[8] There are several journals published electronically which can be accessed through the Internet. Libraries have also witnessed a great proliferation of on-line machine-readable databases. The *Gale Directory of Databases* provides information about more than 15,000 publicly available online databases of all types produced by nearly 3,700 organizations. These databases can be searched through efficient communication links available every where in the world. All such innovations permit the user to identify and locate information, while never entering a library. The rapidly increasing use of microcomputers in libraries has also shown significant improvements in routine operations. Library routines like acquisition, cataloging, circulation, serials control and inter-library loan are all done by using computers.

Is new information technology a challenge for librarians? To answer this question we again look towards the authors of advanced countries. Johnson says that the severity of the problems that are confronting libraries during this period of rapid technological change is not insignificant. The transition to the new electronic library will not be easy for either librarian or user. Many librarians may have trouble adapting to a working environment very different from that in which they began their careers, and some may resist technological change. Without extensive retraining, some librarians may suffer occupational displacement as the practice of librarianship changes.[9] Discussing the situation of the profession in this new and challenging environment Ms. Weingand raises some questions as:

> How can the professional librarian effectively and responsibly perform in such a shifting and ambiguous workplace? How can standards of competence and excellence be maintained at the highest possible level? How can personal self-worth in the professional role be nurtured in the midst of this psychologically demanding world? How can employers be assured that the professionals they hire are competent – and stay competent? How can educators stretch already limited time to reach out beyond the pre-service degree?[10]

The only answer to all these questions is the provision of continuing education for library staff to cope satisfactorily with the challenge of new information technology.

CONTINUING IT EDUCATION IN PAKISTAN: THE STATE-OF-THE-ART

Information technology found its way into Pakistani libraries in the 1980s. Surveys show that computer is being used in a significant number of libraries in big cities.[11] Its use is mostly limited to cataloging but other

operations are also evident in some institutions. Pre-service training for librarians began in 1915 at the Punjab University in Lahore; it was restricted to graduates in 1928. Today, six universities offer library education at postgraduate level. According to Hamid[12], until 1992, there have been 3,304 diploma holders and 2,349 master's degree holders working in Pakistani libraries. What does this large number of professionals feel about the need for continuing education in information technology? A survey by Shahzad Ahmad Siddiqui asked public librarians of Punjab about their continuing education needs. 'Computer applications in libraries' was found to the most demanded of twenty-five different areas of librarianship.[13]

In Pakistan, the need for and importance of continuing education in modern techniques of information handling was felt first of all at the government level in the 1980s. In 1987, the government invited A.C. Fosket, a foreign expert, to prepare a feasibility study for establishing a postgraduate training program in information studies. Besides other recommendations, he also suggested that a center should be developed for continuing education in information studies. He suggested that, in the beginning, PASTIC (Pakistan Scientific and Technical Information Centre) should play this role and afterwards the Pakistan National Library should co-operate with PASTIC in organizing workshops for working librarians. For this purpose, he suggested to develop a computer laboratory at PASTIC with a pool of microcomputers and appropriate software.[14] This recommendation could not be implemented perhaps because PASTIC was unprepared for participation in such a program. Early efforts in the practical training of librarians were made by NADLIN (National Agricultural Development Library and Information Network) when it started a series of automation courses in 1988 in various cities of the country. The Punjab University Library Science Alumni Association (PULSAA), after its revival in 1989, also started a series of seminars and courses and conducted many events with the help of the library science department of Punjab University. Library professionals in Pakistan can not ignore the role of the Netherlands Library Development Project (NLDP) in promoting and developing information technology in the country. One of the major areas of activities of this five year project was arranging courses and seminars to introduce modern technology into libraries. With a pool of computers and other hardware facilities, NLDP established five computer training centers in Islamabad, Lahore, Karachi, Peshawar and Quetta. These centers can be considered as a milestone in the history of continuing education for Pakistani librarians.

A comprehensive list of continuing education events in information technology for librarians in Pakistan is provided in Table 1.

METHODS AND MODES

Various authors describe different ways and methods of providing continuing education. Dr. Mumtaz Ali Anwar[15] counts seventeen modes of continuing or life-long learning for librarians. These include attending workshops, short courses, professional meetings, conferences, lectures, seminars, oral or written reports, and library staff meetings; serving on professional committees; visits to other libraries; reading the current professional literature; participation in informal study groups; teaching courses on a part-time basis; doing research in librarianship; writing for publication; editing professional writings; doing consultation work; and formal enrolment in a degree program. All these methods of professional development are applicable in introducing information technology to librarians and are used to some extent by Pakistani professionals. This paper focuses only the events of training courses, workshops, conferences, seminars, lectures and demonstrations formally organized for comparatively larger groups of professionally qualified librarians. Only events which were wholly concerned with some aspect of information technology have been studied. Lectures on information technology delivered as a part of some general purpose library training, and in-house training opportunities provided by various libraries are excluded. Training enjoyed by Pakistani librarians in foreign countries, or from general computer institutions within the country, as well as courses sponsored by some organizations for regular students of library schools, are also excluded. The period covered is from the early efforts (i.e., 1988) to the end of 1996. During this period, 105 courses and workshops of different duration are recorded. There have been eleven conferences and seminars arranged on information technology, while five special lectures and demonstrations are related in the literature.

ORGANIZERS AND SPONSORS

Continuing education is generally considered the personal concern of librarians. It is their responsibility to be accomplished professionals. Therefore, they should plan their own ways and means for following continuing education in a regular and deliberate program for the duration of their career. But the thing that is most important is, what opportunities are there for the continuing education of librarians? Who should take the responsibility of providing these opportunities? Fay Nicholson counts six providers of continuing education. These are: organizations, library training, professional associations, library schools, vendors and consultants.[16]

In the survey by Siddiqui, public librarians considered that library and information services (LIS) departments were most important in taking the

initiative for continuing education.[17] The situation of library schools has been very poor in this regard. For many reasons they are already unable to provide training in information technology to their regular students. According to Sadiq Ali Khan, a senior library educator in the country:

> What people talk about computers, we are not still capable of handling the libraries with conventional methods too. The libraries are being operated from Peshawar to Karachi by the product of the departments of library and information science of the universities in the country. It could be very well imagined what type of product is coming out. Information studies can not be taught at the departments of library and information science unless they are provided with a pool of reasonable computers, related equipment and qualified teachers in modern library technology.[18]

In a very recently published paper, another library science teacher, Muhammad Ilyas, draws a sketch of this poor condition in these words:

> It is alarming that at present most of the library schools do not offer any separate course on information technology or the study of databases. Only the Department of Library and Information Science at Karachi and Sindh universities offer theoretical courses on information technology. On the other hand, the teachers of library schools paint a rosy picture in the class-rooms by saying that we are information scientists and bridge between information and end-users. It is easy to imagine that how hazardous this dichotomy may be while living in an information-based and information-sensitive society where the conventional librarianship is becoming ineffective day by day.[19]

Therefore, in these conditions we found only one or two events partly arranged by library schools. The main providers of continuing education have been professional associations and foreign agencies. Some of the very active associations are the Pakistan Library Association (PLA) and PULSAA. The NLDP did a lot to provide financial aid in organizing such activities. PLA computer centers have regularly been conducting courses in various subjects relating to modern technology. Other organizers and sponsors of such activities include NADLIN, the LABELNET (Lahore Business and Economics Libraries Network) project organized through IDRC (International Development Research Center, Canada), USAID (United States Agency for International Development), the National Agricultural Research Center, WAPDA (Water and Power Development Authority), the Punjab Library Foundation, the Pakistan Development Banking Institute, the Jinnah Library Gujranwala, the United States Information Services, the British Council, the Academy of Educational Planning and Management, UNESCO, the Sustainable Development Network, and the Lahore University of Management Sciences.

FUNDING AND COSTS

Most of the events were funded by the sponsoring organizations but a nominal fee was also charged to the participants. Ms. Weingand[20] refers to four modes of payment for continuing education: by the employer; by the student; by a scholarship or grant given by an association, library system, etc.; and through government support. All these modes are evident in continuing education activities in Pakistan. In many cases, the employer institutions paid for their employees. There are also a number of examples of payment by individual participants from their own pockets, particularly in the case of unemployed professionals. NLDP also sponsored many librarians to attend courses by paying their fees and travelling costs. The Punjab Library Foundation is an example of funding by government. The foundation sponsors two participants with full tuition fees in every course held at the PLA computer center Lahore.

GEOGRAPHICAL COVERAGE AND PARTICIPATION

Continuing education events have been held in various big cities of Pakistan. However, the federal capital and four provincial capitals were the focus of all activities. Out of a total of 121 different events studied, twenty-three were conducted in Islamabad while ninety were held in Lahore, Karachi, Peshawar and Quetta. Other cities witnessed only one activity each, including Gujranwala, Multan, Tando Jam, Bahawalpur, D.I. Khan, Bannu, Chitral, and Malakand. In all courses, librarians participated in large numbers. The NLDP-sponsored courses alone were attended by more than 1300 people. Librarians employed in all types of libraries such as national, academic, public and special libraries participated in these activities. Knowledge of library automation is considered a prerequisite for having a good job in any institution, and the library schools have so far failed in fulfilling this need of their new graduates. For this reason, a large number of unemployed master degree holders have participated in continuing education activities just after receiving their pre-service qualifications from the universities. Participants represented all areas of the country, even very distant rural areas. Female librarians also participated in significant numbers.

SUBJECT COVERAGE

During all continuing education events librarians were introduced to a variety of aspects of information technology. The PLA computer centers mostly trained librarians in the fundamentals of computers, disk operating systems and office application packages like word-processing, spreadsheets

and database management systems. For library database management, training in INMAGIC and CDS/ISIS has been provided on a large scale. NLDP promoted its own software, LAMP (Library Automation and Management Program) through training courses in every part of the country. Keeping in view the growing use of CD-ROMs, email and Internet in libraries, these aspects have also been covered in various events. To create a general awareness of the use of computers in libraries, many seminars have been conducted. The University of Peshawar library school held a conference on library automation at its Bara Gali campus. The theme of the 15th PLA conference held in 1994 was 'Information Technology in Pakistan: Potentials and Prospects.'

PROBLEMS

Some of the major problems being faced in the provision of continuing education in the field of library automation are:

- There is a lack of enthusiasm and appreciation of the need for continuing education at both government and professional levels.
- Continuing education programs, particularly in information technology, are not cheap. Training requires costly equipment and highly qualified trainers. Lack of money is a major problem in providing adequate resources for automation courses.
- There is a scarcity of qualified instructors in library automation, particularly in small and distant cities. Even in big cities, mostly instructors are employees of various institutions and can not spare time for such activities.
- The institutions to which libraries are subordinated generally do not release professionals to attend these courses, particularly when they are held in cities other than their duty place.
- Many libraries have just one professional librarian, which prohibits any leave of absence even for a couple of weeks.
- There is no national policy for continuing education for librarians.
- There is a severe lack of co-operation and co-ordination among sponsoring agencies, professional associations, library schools, employing institutions and professionals.

CONCLUSION

The study of past few years of continuing education events shows that Pakistani librarians are aware of the importance of information technology in libraries and are to some extent making themselves ready to cope with this

challenge. The efforts made during previous years are, if not satisfactory, appreciable. People from all over the country participated in these activities with great professional zeal. The role of foreign agencies in this respect is also appreciable. At the threshold of the 21st century, activities of educating librarians become of more significance, as the next century will see a society that will be entirely technology-based, and without good resources of information, no nation will prosper. To make the continuing education activities better in Pakistan some suggestion are given here:

- As suggested by Dr. Mumtaz, the government should establish a National Center for Software Development and Training to assume the responsibility for manpower training.[21]
- The PLA should draw up a nationally accepted time-table for continuing education activities during each year, taking into consideration the geographic spread of activities, the availability of finance, and subject matter and coverage.
- There should be needs assessment surveys in various geographical areas of Pakistan and subject areas of information technology.
- There should be incentives for participation in continuing education activities. Participation should be considered a promotion criterion for librarians. Special computer allowance may also be granted to trained personnel.
- Individual libraries should arrange guided tours for their staff to automated libraries and information centers.
- The objectives of the training activities should be defined clearly in advance, and evaluation of training courses and workshops should be done afterwards.
- The spectrum of automation training should be widened to include cities of the country. Information technology courses should be conducted at least at divisional level. The computer laboratories of ordinary computer colleges can be used for this purpose.
- Training should focus on the needs of specialized groups of librarians like medical, law or commerce librarians.
- Special courses for library paraprofessionals should be designed, particularly by the PLA computer centers.
- Continuing education in information technology can also be provided in the form of short courses through distance learning methods. Allama Iqbal Open University, which already offers LIS courses at graduate level, can play a vital role in this regard.
- Many aspects of information technology have, as yet, been ignored in training courses. Training should also be provided in areas such

as barcode technology, local area networks, basics of computer hardware, retrospective conversion, retrieval in specific databases, system analysis, basics of computer graphics for designing library advertisements, trouble shooting in library automation, library automation planning and comparison of library software.

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Table 1. Continuing Education Events in Information Technology

Training Courses/Workshops

Year	City	Title	Duration	Organizer/Sponsor
1988	Islamabad	Word-processing with MS-Word	1 week	NADLIN
1988	Lahore	Word-processing with MS-Word	1 week	NADLIN
1989	Islamabad	Modern Library Methods and Techniques	1 week	NARC/PARC*
1989	Islamabad	Scimate Software (Database System)	2 weeks	NADLIN
1989	Lahore	Use of Microcomputers in Libraries	1 week	PULSAA
1990	Islamabad	CDS/ISIS		PLA
1990	Lahore	Use of Micro CDS/ISIS	2 weeks	LABELNET Project
1991	Islamabad	INMAGIC	2 weeks	NARC*
1991	Lahore	National Information Network Database	1 week	NADLIN/WAPDA
1991	Lahore	Use of Computers in Libraries	2 weeks	PLA/PLF
1992	Islamabad	Searching of International Databases on CD-ROM (2 courses)	1 week	NARC/USAID
1992	Karachi	CDS/ISIS	2 weeks	PLA/NLDP/Pakistan Development Banking Institute
1992	Karachi	Role of Computer in Library	1 week	PLA
1992	Lahore	Information Processing and Preparation of Data for Input	1 week	NADLIN
1992	Lahore	Library Automation	18 weeks	PLA
1992	Lahore	Library Automation Planning	1 day	PLA/NLDP
1992	Quetta	Computer Application	6 weeks	PLA
1993	Gujranwala	Library Automation	2 weeks	PULSAA/Jinnah Library
1993	Islamabad	Library Management & Services, Resource Sharing & Information Networking	3 days	NADLIN
1993	Islamabad	Computer Basics (2 courses)	1 month	PLA
1993	Islamabad	Database Management	3 weeks	PLA
1993	Islamabad	Library Automation	1 month	PLA
1993	Islamabad	Library Automation	1 week	PLA
1993	Islamabad	Data Communications	2 days	PLA
1993	Karachi	Library Automation	3 months	PLA
1993	Karachi	Library Automation	3 weeks	NLDP/USIS
1993	Lahore	Library Automation	6 weeks	PULSAA/Punjab University
1993	Lahore	Library Automation	10 weeks	PLA
1993	Lahore	Library Automation	17 weeks	PLA
1993	Lahore	Planning and Implementation of Automated Library Systems	4 weeks	PLA
1993	Multan	Library Automation	2 weeks	NLDP
1993	Peshawar	Library Automation	1 week	NLDP
1993	Peshawar	Managing the Information Revolution	2 days	PLA/NLDP
1993	Peshawar	Computer Application (2 courses)	1 month	PLA
1993	Peshawar	CDS/ISIS	2 weeks	PLA
1993	Peshawar	Computer Application	2 weeks	PLA
1993	Quetta	CDS/ISIS	2 weeks	PLA/NLDP
1993	Quetta	Word-processing (3 courses)	6 weeks	PLA
1993	Quetta	Spreadsheet Management	1 month	PLA
1993	Tando Jam	Computerization & Database Development under INMAGIC System	1 month	NADLIN
1994	Islamabad	Computerization of Libraries and Documentation Centers	2 weeks	AEPAM**
1994	Islamabad	LAMP	1 week	NLDP
1994	Karachi	LAMP	1 week	NLDP
1994	Karachi	LAMP & CDS/ISIS	2 weeks	NLDP

1994	Karachi	Library Automation (3 courses)	3 months	PLA
1994	Lahore	LAMP	1 week	PLA
1994	Lahore	Library Automation	16 weeks	PLA
1994	Lahore	Library Automation	16 weeks	PLA
1994	Lahore	Library Automation and Management	4 weeks	PLA
1994	Peshawar	Computer Application	10 weeks	PLA
1994	Quetta	LAMP	2 weeks	NLDP
1994	Quetta	Word-processing (2 courses)	1 month	PLA
1994	Quetta	Computer Application (2 courses)	1 month	PLA
1994	Quetta	LAMP	1 month	PLA/NLDP
1995	Bahawalpur	Automated Technical Services in Libraries	2 weeks	NLDP
1995	D.I. Khan	LAMP	2 weeks	NLDP
1995	Islamabad	Inmagic Software for Library Automation	2 weeks	NADLIN
1995	Islamabad	Database Production and Networking	1 week	PLA/UNESCO
1995	Islamabad	INMAGIC	10 days	NADLIN
1995	Islamabad	LAMP & CDS/ISIS	1 week	PLA/NLDP
1995	Islamabad	LAMP & CDS/ISIS	2 weeks	PLA/NLDP
1995	Islamabad	Email/Internet/CD-Rom	1 week	NLDP
1995	Karachi	Library Automation (2 courses)	3 months	PLA
1995	Lahore	CDS/ISIS (Advance)	2 weeks	PLA
1995	Lahore	Library Automation	10 weeks	PLA
1995	Lahore	Library Automation	16 weeks	PLA
1995	Peshawar	Computer and LAMP	1 month	NLDP
1995	Peshawar	LAMP & CDS/ISIS	2 weeks	PLA/NLDP
1995	Quetta	Word-processing (4 courses)	1 month	PLA
1995	Quetta	Spreadsheet Management (LOTUS 123)	1 month	PLA
1995	Quetta	Foxpro	2 months	PLA
1996	Bannu	LAMP	1 week	NLDP
1996	Chitral	LAMP	1 week	NLDP
1996	Islamabad	Information Technologies for the Future Libraries of Pakistan	4 days	PLA
1996	Islamabad	LAMP (2 courses)	2 weeks	NLDP
1996	Islamabad	Email & Internet	1 day	NLDP
1996	Karachi	Library Automation	3 months	PLA
1996	Karachi	LAMP	1 month	NLDP
1996	Karachi	LAMP	1 week	NLDP
1996	Lahore	Electronic Mail	1 day	PLA/NLDP
1996	Lahore	Library Automation	10 weeks	PLA
1996	Lahore	Library Automation	16 weeks	PLA
1996	Malakand	LAMP	10 days	NLDP
1996	Peshawar	LAMP (3 courses)	2 weeks	NLDP
1996	Peshawar	Email	1 day	SDN/PLA
1996	Peshawar	Email & Internet	2 days	NLDP
1996	Quetta	Wordprocessing & Spreadsheet (3 courses)	6 weeks	PLA
1996	Quetta	Introduction to Computers	1 month	PLA

Conferences/Seminars

Year	City	Theme	Date/s	Organizer/Sponsor
1989	Lahore	Use of Computers in Libraries	3 Apr	PULSAA
1990	Lahore	Library Networking and Resource Sharing	6 Aug	PULSAA/USIS
1991	Lahore	Library Automation	21 Oct	PLA/USIS
1991	Lahore	Library Automation	16 Dec	PLA/USIS
1992	Bara Gali	Automation and its Applications in Librarianship	20-25 June	LIS Dept., University of Peshawar

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1994	Lahore	Changing Trends in Information Handling	31 Oct.	USIS
1994	Lahore	Information Technology in Pakistan: Potentials and Prospects	27-29 Dec	PLA
1994	Lahore	Status of Library Automation in Pakistan	30 July	PLA
1995	Lahore	Exploiting Information Superhighway by Libraries in Pakistan	3 Dec.	PLA/USIS
1996	Lahore	Multimedia and Electronic Publishing	28 Mar	PLA/British Council
1996	Peshawar	Information Technology in 21st Century and the Role of Libraries	15-17 Sept.	PLA

Lectures/Demonstrations

Year	City	Topic	Date	Organizer/Sponsor
1990	Lahore	CD-ROM	25 Feb	PULSAA
1993	Lahore	Information Technology in the United States	9 June	PLA
1993	Peshawar	Library Automation	7 Aug	NLDP
1994	Lahore	MINISIS	15 Nov	LUMS***/IDRC
1995	Lahore	Electronic Information Sources		PLA/PLF

*NARC/PARC (National Agricultural Research Centre/Pakistan Agricultural Research Council
**AEPAM (Academy for Educational Planning and Management)
***LUMS (Lahore University of Management Sciences)

Information Technology and Library Education in Pakistan: Recent Developments in the Curriculum*

INTRODUCTION

It has been recognized everywhere that the new technology, mainly computer and telecommunications, tends to reduce dramatically the space and time constraints on information flow in the world. The availability of information thus is easier and much cheaper. Information is now frequently seen as a commodity. In that perspective, information services acquire a privileged status being regarded as basic elements of the economic system, and as such undergo deep transformation to improve their capacity to meet market needs. A demand exists for information professionals who can understand and effect change in providing complex services. In developing countries like Pakistan, although there are so many obstacles hindering new technology to become popular, computers have had considerable effects in librarianship. A number of libraries have started using computers and modern communication facilities like electronic mail and the Internet. The curricula of library science programmes now need to be revised according to the new demands and trends in the profession. This paper shows how Pakistani library educators are planning to meet this challenge.

LIBRARY EDUCATION IN PAKISTAN: AN INTRODUCTION

The history of library education in Pakistan can be traced from 1915, when an American librarian Asa Don Dickinson organized a library training class at Punjab University, Lahore. This was the first library training class in the subcontinent, rather than in the East, because the other formal library school founded in the East was in 1920 at Boon University in China. It may be interesting to mention here that London University started its library school three years later in 1918. Dickinson's assignment specifically required him to teach modern library methods to the working librarians. His first class consisted of 30 students, drawn from the staff of the libraries of the university and the local colleges. The educational qualifications of the class varied from Honors in Oriental languages to the B.A., and from

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* Source: "Information Technology and Library Education in Pakistan: Recent Developments in Curriculum." *Education for Information*, vol. 15, no. 3 (October 1997): 197-205.

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Matriculation to Non-Matriculation. Dickinson's curriculum included the following instruction:

- Classification
- Cataloguing
- Bibliography and Book Selection
- Library Administration
- Viva Voce

The course remained suspended during the two years following Dickinson's departure in 1916. The course was reinstated in 1918. In 1921 Lala Labhu Ram, a pupil of Dickinson enlarged the syllabus to include seventy-two lectures instead of the original twenty-five. Since 1928 only graduates were admitted to the class, and in 1930, the study of either German or French became compulsory [1].

Although the library training programme was started in 1915, the training facilities were non-existent when Pakistan came into being in 1947. The regional library associations started short term certificate courses to meet the immediate needs. Then the University of Karachi took the lead and started the Post Graduate Diploma Course in 1956. This was followed by the other universities. The first Master's degree in library science was also started by Karachi University in 1962.

Punjab University offered a Diploma programme in 1959 and a Masters in 1974. Peshawar University started a Diploma programme in 1962 and a Masters in 1982. Sind University started a Diploma programme in 1970 and Master in 1973. Balochistan University, Quetta and Islamia University, Bahawalpur started their post graduate library education programmes in 1982 and 1983, respectively [2].

Now six universities offer post graduate courses in library and information science. Three other universities are planning to start LIS education at post graduate level. These are:

- University of Azad Jammu & Kashmir, Muzaffarabad
- Allama Iqbal Open University, Islamabad
- Gomal University, Dera Ismail Khan [3]

The admission requirement for the one year diploma is a Bachelor's degree. The Diploma is required for admission into the one year Master's degree. Karachi and Sind Universities offer these courses in a semester system and the contents of the courses are divided into small components. The other four universities award diploma and degrees on an annual examination basis. Course contents are divided into five or six papers. A

research thesis is also offered to Master's students, but it is not compulsory. Some universities also include a viva voce in their annual examinations.

INFORMATION TECHNOLOGY IN LIBRARY EDUCATION: BACKGROUND

For the first time in Pakistan in 1973 information technology was introduced at Karachi University in the course entitled 'Introduction to information science and communication'. This was the time when a semester system was adopted by the university and the library school was able to introduce such new courses. This subject was offered as an elective course in a Master's programme [4]. In 1974, David G. Donovan visited Pakistan as a USAID consultant [5]. Donovan supported the information science course in these words,

> The Department of Library Science at Karachi University should continue its plan to develop student skills in organizing materials, information and data for information storage and retrieval programmes which are desirable in Pakistani libraries at that time. Instruction should be included in the use of punched card machines for library purposes. Special courses of instruction in the use of computers in libraries may be given at a future date [6].

Continuing the story of information science education in Pakistan, Anis Khurshid says,

> Two years later, the IDRC/UNDP Mission visiting Pakistan recommended the institution of a one-year information science course at the Quaid-e-Azam University, Islamabad in collaboration with the Pakistan Scientific and Technological Information Centre (PASTIC) for a group of 10-15 M.Sc. graduates selected for advanced training as information specialists. This recommendation, however, did not take into account the fact that the Centre itself was not fully equipped and suitably prepared at that time for such an advanced training in information handling. This recommendation could not be implemented perhaps for the unpreparedness of PASTIC for such a programme. A.C. Fosket made a similar proposal in the year 1986 to make PASTIC a focal point for workshops in information studies in Pakistan, on subjects such as computer-based information system, resource sharing, computer-based cataloguing, and audiovisual materials. The proposal met with a good deal of criticism in the country because of the absence of adequate resources of faculty and other needed infrastructure at PASTIC [5].

At Punjab University, Lahore Master's programme was started in 1974 and the course on information science was included in the syllabus as an elective subject in 1975-1976 as 'Documentation and information retrieval' [7]. In 1980, a Curriculum Revision Committee was formed by the University Grants Commission which recommended addition of the

component of information science as compulsory subject and adoption of the nomenclature of library and information science for the names of degrees and departments. This recommendation was implemented by a majority of the departments [5]. In 1990, Dr. Sajjad ur Rehman designed a revised curriculum for Diploma and Master's programmes at Lahore school. One of the salient features of that curriculum, in his own words, was:

> Besides the required introductory course on information science at Diploma level, four advanced information science and technology application courses have been introduced [8].

This curriculum included information technology related courses such as 'Database design and management', 'Networks and networking', 'Searching and information retrieval', System analysis' and 'Application of computers in library and information services'. The curriculum was approved by the Board of Studies but due to some unavoidable factors could not be implemented.

Regarding information science components Dr. Abdus Sattar Chaudhry reviewed the curricula of six library schools in Pakistan. Through the following table he showed the adequacy of the coverage of information science topics in the curricula.

Topics covered adequately

Information storage and retrieval
Current awareness services
Information technology
International information systems
Sectoral information systems

Topics covered inadequately

Nature of information
Field of information studies
Use of information
Information networks
Electronic data processing
Information policy and infrastructure
Online searching
Implementing automated systems
Indigenous information systems

Topics neglected

Information cycle
Bibliometrics

Information system structure
Economics of information
Information marketing
Microcomputer applications [9]

In another listed study conducted by Shaheen Majid [10], courses on information science have been listed in the curricula of five library schools in Pakistan. The University of Peshawar, however, lacks such a course. According to Khalid [11] a course on library automation is being taught informally at Punjab University since 1993.

RECENT DEVELOPMENTS IN LIS CURRICULUM

In 1991, the University Grants Commission formed a Curriculum Revision Committee for Library and Information Science which comprised eminent LIS educators and working professionals from throughout the country. This Committee, after various meetings, presented a revised curriculum for library and information science [12]. In the curriculum for the Master's programme, the importance of information technology in library services was recognized, for the first time. One of the objectives of the programme was:

> To develop understanding among the students about the application of information technology for efficient organization, storage and retrieval of information.

The following IT related courses were recommended in the Master's programme:

MLIS (Previous year)

Introduction to information science

MLIS (Final year)

Library automation
Networks and networking
Information storage and retrieval

For faculty development, summer programmes, opportunities for higher education, and use of visiting teachers were recommended. Adequate library resources and a computer laboratory were also recommended. To encourage the preparation of textbooks in the Urdu language, it was recommended that the University Grants Commission should take an immediate initiative to constitute a body and motivate authors to publish such books. The curriculum was sent to all LIS departments but due to the lack of resources it could not be implemented properly.

Since 1991, the Netherlands Library Development Project for Pakistan (NLDP) took the initiative to again revise the curriculum. Mir Hassan Jamali Chairman, Department of Library and Information Science, University of Balochistan was made the coordinator of all revision activities [13]. Under the auspices of the University Grants Commission and financially sponsored by NLDP, a two days Curriculum Review Meeting was held on 2-3 April, 1995. This meeting, chaired by Prof. Dr. Syed Jalal-uddin Hyder, was attended by the representatives of all library schools in the country. The MLIS curriculum was revised and new ideas which had appeared in the library world in recent years, were incorporated. Various IT-based courses have been introduced into the two-year Master's degree programme [14]. The description of the outline of IT-based courses is given here.

Library Automation/Information Storage and Retrieval

Basic concepts and definition of library automation; integrated automated system; implementation of automated system; needs assessment, selection and evaluation; sources of procurement, implementation of automation projects; maintenance of an automated system; software application in the Pakistani situation; functional requirements of library operations:

acquisitions, cataloguing, circulation and periodical control; using microcomputers in libraries: introduction of microcomputer technology; hardware and software application; microcomputer-based database development; use of microcomputers in Pakistani libraries and information centres; basic concepts of a database; database structure; decisions involved in database design; construction of bibliographic databases; considerations in creation, management and maintenance of a database; basic concepts of searching and information retrieval; use of Boolean logic in searching; formulation of search strategy; use of vocabulary control; literature searching concepts; CD-ROM applications for information retrieval.

Resource Sharing and Networking

Meaning, definition, scope, importance of resource sharing; prerequisites of resource sharing; functions of resource sharing; historical development of resource sharing systems, e.g., UAP, UMI, ANA, ANASCO, etc.; tools of resource sharing; fundamental concepts of networking; nature, characteristics and historical development of different information networks; scope, services and pricing structure of bibliographic utilities and online services; resource sharing infrastructure for using networking facilities; union catalogues and lists; manpower requirements; characteristics of the

telecommunication component in developing countries with special reference to Pakistan; selection, economics and evaluation of information networks; networking and resource sharing in the microcomputer environment; local area and metropolitan networks; different trends of LAN; CD-ROM based networks; electronic mail and bulletin boards.

Management Information System (MIS)

Introduction to the information system; people, organizations, system and management; system and models; management and decision making; technology concepts, software fundamentals, file and database processing, microcomputer system, telecommunications; MIS in practice, transaction processing, office automation; building MISs, requirements analysis, system design, system acquisition, implementation and maintenance, end-use computing and development; management of MIS, security, computer crime, disaster recovery, etc.

In addition to the fully information technology based courses there are also IT components in various other courses of MLIS. For example:

Introduction to Library and Information Science

Fundamentals of computerized information storage, retrieval and dissemination; introduction to computer hardware and software; types of software (DOS, application software, using computer spreadsheets, graphics, etc.); searching and retrieval: Boolean operators; basics of online searching and data telecommunications, CD-ROM, LAN, WAN, E-mail.

Information Sources and Services

Use of machine-readable databases in reference and information services; CD-ROM applications in information services.

Research Methods

Use of computer in research.

Advanced Technical Operations

Standard bibliographic descriptions, ISBD, MARC, UNIMARC, CCF, etc.

BEST COPY AVAILABLE

Introduction to Literature of Science and Technology, Social Sciences/Humanities, Islam, Pakistan and Regional Literature

Science & technology related bibliographic, numeric and full-text online and CD-ROM databases.

Communication and Media Librarianship

Comparison and economics of print, microform and computer products.

Management of Serial Publications

Automated systems for serial control.

A computer laboratory with the following machinery have been recommended for each library school (Table 1).

Table 1

- 11 Personal Computers
- Un-interruptable Power Supply (UPS)
- Data-show
- Overhead Projector
- Air Conditioners
- Heaters
- White Board
- Vinyl Flooring
- Table/Chairs (Furniture)
- Local Area Network (LAN) system
- Tape Back-up
- E-mail, etc.

For teachers' training a one-month library automation course has been recommended. The course contents are shown in Table 2.

Table 2

- Library Automation & Management Program (LAMP)
- CDS/ISIS
- Database design
- CD-ROM
- E-mail / Internet
- Multimedia
- LAN / WAN

CONCLUSION

As far as the question of implementation of the new/revised curriculum is concerned it has been seen that, with minor modifications, some schools have implemented it (for example [15]) and the others are in this process (for example [16]). What will be the effects of the implementation of an IT-based library education programme on Pakistani libraries and job market of librarians? Like other countries, will the role of the librarians be changed into information scientists/information intermediaters? At the moment we cannot answer these questions. One thing which should be considered as more important is the obstacles there are in implementing the revised syllabi in our library schools. Lack of financial resources is still a problem for library schools. There are no trained faculty, no textbooks and other library resources and most vital for IT-based courses, no computer facilities. Curriculum revision will only be fruitful when all requisites are fulfilled. Information technology is the need of our time, and for the prosperity of the nation, the Pakistan Government, professional associations and donor agencies can all play a part in building the necessary infrastructure.

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Information Technology in Library Schools: A Case Study of the University of the Punjab*

To begin with it is necessary to understand the meaning and definition of 'Information Technology'. In simple words it may be defined as:

> The acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronic-base combination of computing and telecommunication is called 'Information Technology.'

The information technology consists of computers and communication technology. The computers have made the possibilities of storage and retrieval of a large quantity of data, while the access of data is very much easy through modernized communication techniques in any part of the world.

Though information technology has become part and parcel of libraries and information centers in developed-countries, yet the developing countries like Pakistan do not lag behind. Fifteen years ago computers were remote and expensive, distant from library application. Currently, a number of libraries have microcomputers to manage their catalogs, circulation, acquisitions, statistical reports and other activities. Even in Lahore, more than 50 libraries are using computers. Some of them are enjoying CD-ROMs, Electronic Mail and Local Area Networks (LAN).

With such developments in libraries and information centers, it is incumbent of schools of library and information science to enhance their activities to cope with, evaluate, use and train students in the use of diverse technologies that have resulted from three interconnected, successive revolutions: the information revolution, the computer revolution, the communications revolution.

Being the pioneer of library education in Sub-continent, established in 1915, Department of Library Science, University of the Punjab has felt the need of the day and taken various steps in promoting information technology and library automation. A brief review of these efforts is presented here.

CURRICULUM

The Department started Master's Degree Program in 1974. On the introduction of the semester system, an independent course on 'Documentation and information retrieval' was included in the curriculum

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* Source: "Information Technology in Library Schools: a Case Study of the University of the Punjab." *Pakistan Library Association Journal*, no. 17 (October 1995 – March 1996): 7-15.

for the first time in 1975-76. In 1980, the semester system was discontinued and the Department adopted the curriculum revised by the University Grants Commission, and the course of information science was renamed as 'Information science and systems.'

In 1988, Dr. Sajjad ur Rehman resumed his teaching assignment at the University. He took the initiative for the exercise of revision of curriculum. After several faculty meetings and discussions, he prepared a working paper with a broad framework of the changes proposed to be introduced. The new syllabus was finally approved by the Board of Studies in its meeting of April 3, 1991. But due to some unavoidable factors, it could not be approved by the concerned university authorities. In this curriculum, one course entitled 'Introduction to Information Science' is required at Diploma level. At Master's level, following information technology related courses have been introduced:

- Database Design and Management
- Networks and Networking
- Searching and Information Retrieval
- Application of Computers in Library and Information Services
- Information Policy and Planning

FACULTY TRAINING

Fortunately, six out of seven faculty members of the Department are computer literate. Mr. Afzal Haq Qarshi (Assistant Professor) attended a 2-month computer course at National Agricultural Research Council (NARC), Islamabad. Miss Umera Shah (Assistant Professor) got computer training from Mathematics Department, P.U. She attended an 18-week course at PLA Computer Training Center, Lahore. She also participated in an advanced 3-week course at Manchester University, U.K. Mrs. Tunveer Jehan Khan (Assistant Professor) got training from Mathematics Department, P.U. Mr. Imran Ghani (Assistant Professor) and Ms. Kanwal Amin (Lecturer) attended courses at the Hague Polytechnic Institute, Netherlands. The duration of the courses was 6 weeks and 3 months respectively. Ms. Kanwal Amin has also attended some automation courses offered by PULSAA and Department of Administrative Sciences, P.U. The author has attended various automation courses at the Institute of Leadership and Management (ILM) Lahore, PLA Computer Training Center, Lahore, Pakistan Institute of Management (PIM), Lahore, and National Library of Pakistan, Islamabad.

FACULTY PARTICIPATION IN INFORMATION TECHNOLOGY ACTIVITIES

Faculty members have been participating in information technology activities outside the Department. In the past, Dr. Sajjad ur Rehman participated as resource person in various courses on library automation. Mr. Afzal Haq Qarshi is a member of Managing Committee of PLA Computer Training Center, Lahore. He has attended various meetings of the Committee in which he has taken active part in designing the automation courses for working librarians.

The author is a member of the Program Committee of PLA Computer Training Center, Lahore. He is also on the faculty of the Center for CDS/ISIS, LAMP, and Library Automation and has conducted 9 different courses for working librarians as well as the students of library and information science. He has been teaching *IT* in different courses held at Islamabad, Multan, and Bahawalpur. On behalf of the Computer Center, he has provided free consultancy service to more than 20 institutions of Punjab in automating their libraries. He has presented papers on different topics of information technology in various Seminars/Conferences. Some of his articles have already been published in the reputed journals of library and information science. He has also helped the computer programmers of the Netherlands Library Development Project (NLDP) - Pakistan in designing and debugging the standard software for Pakistani libraries called LAMP.

COMPUTER HARDWARE FACILITIES

The teaching of *IT* could never be possible without having a proper computing facility. Keeping in mind this necessity, Dr. Sajjad ur Rehman did a lot from the PULSAA platform for the establishment of a well equipped computer laboratory in the Department. The concerted efforts bore fruit and in 1989, the Punjab Library Foundation donated Rs.200,000 for this purpose. The following machinery were purchased in 1990:

- One IBM Compatible 80286 computer with color monitor, 80 MB Hard Disk, and a Double Sides-Double Density Floppy Drive Unit.
- 3 PC/XT computers with monochrome monitors and Double Sides-Double Density Floppy Drive Units.
- One EPSON Printer 80 columns.
- The systems were connected with Local Area Network (LAN).

In 1993, the mother board of 80286 system was changed to the updated version 80386, Double Sides-Double Density Floppy Drive Unit was upgraded to Double-Sides-High Density, the old out of order Hard Disk was

replaced with the new 40 MB Hard Disk, and a new disk drive unit of 3.5" size was installed.

With the continuous struggle and repeated requests of the author, NLDP donated an IBM compatible 80386-DX computer with 132 columns Panasonic Printer to the Department.

CD-ROM TECHNOLOGY

In 1994, NLDP donated CD-ROM Drive with Sound Blaster to the Department. Now the Department has the following reference tools on Compact Disks (CDs):

- Multimedia Encyclopedia
- Library of Congress Subject Headings
- National Bibliographies of Denmark, Italy, The Netherlands and Portugal

ELECTRONIC MAIL

In early 1995, Mr. M. Iqbal Cheema, Director, Pak Book Corporation was the chief guest in a function of the Department where he announced to donate E-mail facility to the Department. Now the E-mail is working well. The E-mail address of the Department is:

khalid@dlspul.brain.com.pk

TEACHING INFORMATION TECHNOLOGY

In the past, the following teachers have been teaching the course of Information Science and Systems:

- Mr. Muhammad Aslam Mujahid
- Dr. Abdus Sattar Ch.
- Ms. Nighat Afza
- Ms. Shabana Bilal
- Mr. Mushtaq Ahmed
- Mr. M. Anwar ul Haq Qureshi
- Dr. Sajjad ur Rehman

Mr. Imran Ghani has been teaching this course for the last several years.

In 1993, Ch. Javed Iqbal, now Assistant Director Libraries and Information Services, the British Council, Lahore was hired to deliver some lectures on library automation.

In 1993, a two-week computer course was conducted by the author for the M.L.Sc. class at PLA Computer Training Center. Fundamentals of computer, DOS and MS-Word were taught in the course. With the sponsorship of NLDP, two four-week courses were arranged in 1994 and 1995 at PLA Computer Training Center specially for the students of the Department. The course contents included Fundamentals of computer, DOS, Library automation, CDS/ISIS, LAMP and SERNET.

Since September 1993, the author has been taking a one-hour lecture per week for the Master's class on the subject of library automation. The following topics are covered during an academic year:

> History, Types, Components of Computer; Storage Media; Programming Languages; Systems & Applications Software; Choosing Software; Need/Importance of Automation in Libraries; Library Software in Pakistan; Library Automation Problems in Pakistan; CD-ROM; Electronic Mail.

Some components of *IT* are being taught in other courses like CD-ROM, Databases and Networking in the course 'Reference Services and Sources', Use of *IT* in special libraries in the course 'Special Libraries and Documentation Centers', On-line and CD-ROM reference sources in the course 'Resources in Humanities, Social Sciences and Science and Technology.'

DEPARTMENTAL LIBRARY

Department of Library Science has a special library on the subject of library and information science. The library has more than 4000 books. In 1994, the management of the Department decided to automate the library catalog. LAMP, prepared by NLDP, was procured for this purpose. Bibliographic information of about 600 titles has been entered in the computer. With the help of the printer, a card catalog is also being maintained for students' use.

CONTINUING EDUCATION

Continuing education is the only way to keep the working profession is abreast of the latest information technology. Department of Library Science has played a significant role in imparting in-service training to its old graduates and other librarians in the country.

Punjab University Library Science Alumni Association (PULSAA) was revived in December 1988. Two of its objectives are as under:

- To help the Department meet its goals and objectives by supporting and promoting its programmes;

- To conduct continuing education programmes like seminars, conferences, lectures, refresher courses, etc. for the professional development of alumni.

With the help of the Department of Library Science, PULSAA has conducted four courses on the use of computer in libraries, CDS/ISIS, and other aspects of library automation. Three courses were held in Lahore and one was in Gujranwala. The duration of the courses varied from one week to six weeks. PULSAA has also arranged some lectures and seminars on different topics of information technology like CD-ROM, networking, etc. Official quarterly newsletter of the Association, *PULSAA News*, publishes news and articles on the use of new information technology in libraries. Special chapters on library automation were included in the two special issues of the newsletter.

CONCLUSION

Proper handling of information sources in this era of information explosion, can not possible without the help of new information technology. Due to its excellent efficiency and marvelous performance, the popularity of computer is increasing day by day in the field of library and information services. Although the authorities at the Department of Library Science, Punjab University felt the importance of this necessity and made some efforts to introduce information technology to the students of library science but these efforts are not enough. It is, therefore, suggested to implement the revised curriculum without wasting any more time. Though the faculty members of the Department got training in this field at their own, yet a lot of work is required to be done for the faculty development by the authorities of the University and the University Grants Commission. There are not ample computer facilities in the Department to cater for the practical requirements of a hundred students of Diploma and Master's classes. The computer laboratory should be equipped with at least 20 personal computers and there should be a sufficient budget for the maintenance and other recurring expenditures. A separate computer should be acquired for the Departmental library and online catalog searching should be open to the teachers and the student. For proper teaching of this subject, a reasonable number of books and periodical titles on information technology should be provided in the Departmental library. Research on the topics related to *IT* should be appreciated by the faculty and the students and all facilities should be provided for this purpose.

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PLA Computer Training Centre, Lahore: Three Years of Success*

The information explosion and data communication revolution is now a global problem. Information and knowledge have profound influence on our lives. In the information-centered society, computer hardware, software and telecommunications provide with increasingly rapid and inexpensive access to information services.

In Pakistan, library automation has been slow due to acute shortage of expertise in the area. Library education programs in local universities do not offer formal instruction and training on the use of information technology in the libraries.

Under these circumstances, the PLA Computer Training Centre was indeed a major breakthrough in library and information science education. It was established in Lahore in 1992. It was the start of a new era of developments in the field of librarianship.

HISTORICAL BACKGROUND

The idea of the Computer Centre was conceived in the first Netherlands Library Development Project (NLDP)-Pakistan Coordinating Committee Meeting held in Islamabad on November 18, 1991. The Committee decided that it was important to provide computer know-how to the librarians as well as computer equipment to libraries for automation. The idea was appreciated by all library-related agencies and associations.

As a result to various meetings and discussions of a variety of institutions, the Directorate of Public Libraries, Punjab's offer to provide the housing facility for the Centre was accepted. The Secretary, Punjab Library Foundation promised to provide an annual grant of Rs.100,000 to meet the recurring expenditures. NLDP provided all initial equipment and costs to setup the Centre. Pakistan Library Association agreed to work as steering agency of the Centre.

The Centre was inaugurated by the then Punjab Minister of Education, Barrister Usman Ibrahim. The first course started on November 2, 1992.

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* Source: "PLA Computer Training Centre, Lahore: Three Years of Success." *Pakistan Library Association Journal*, no. 19-20 (October 1996 – October 1997): 58-69

OBJECTIVES OF THE CENTRE

- To equip librarians with skills necessary to prepare reports and correspondence using word-processing.
- To enable librarians to understand the fundamentals of database management and its applications to libraries.
- To provide formal training for library automation and equip them to face the challenges of rapidly changing world.
- To make Centre's alumni aware of the most recent developments which are taking place in information and computer technology.
- To serve as an intellectual resource base and a centre of excellence for research in library automation, library software and their customization for Pakistani libraries.
- To enable participants to make sound and viable decisions, in library automation, using logical analysis.

MANAGEMENT

The Centre is working with an independent status under the overall advice and supervision of a governing body that is called the Managing Committee. It comprises the following members from different library related agencies and associations:

1.	Secretary, Punjab Library Foundation	President
2.	Manager, PLA Computer Training Centre	Secretary
3.	President, PLA (Punjab Branch)	Member
4.	President, PULSAA	Member
5.	President, Punjab College Library Association	Member
6.	Chairman, Dept. of Library Science, Punjab University	Member
7.	Deputy Director, Directorate of Public Libraries, Punjab	Member
8.	President, Punjab University Librarians Organization	Member
9.	Computer Specialist, University of Engineering and Technology	Member
10.	Assistant Library Director, The British Council, Lahore	Member

The role of the Managing Committee is:

- To set broad policy guidelines for the Centre and its programs.
- To review operations of the Centre.
- To raise and control necessary funds for the operation and maintenance of the Centre.

- To introduce and promote Centre's programs to the librarians in Punjab.
- To formally approve the Centre's programs, courses, appointment of instructors, course expenditures, and other decisions made by the Program Committee.

To overall manage the Centre, Mrs. Bushra Riaz (Chief Librarian, Lahore University of Management Sciences) was appointed as Manager of the Centre. After one year, in November 1993, due to some personal reasons, she resigned from the position of the Manager. Then the Managing Committee appointed Mr. Muhammad Taj (Deputy Chief Librarian, Quaid-e-Azam Library) as Manager.

The role of the Manager is:

- To work as convenor of Managing Committee and Program Committee.
- To manage the staff of the Centre.
- To maintain the finances of the Centre.
- To supervise the instructors and their performance.
- To supervise and administer the day-to-day routines and operations of the Centre.
- To declare results prepared by instructors.
- To keep accounts and conduct annual audit.

To run the routine programs and to manage the academic work, there is a Program Committee that comprises the following persons from the field of librarianship:

Mr. Muhammad Taj — Convenor
Manager PLA Computer Training Centre

Mr. Shaukat Hussain — Member
Deputy Director, Public Libraries, Punjab

Mrs. Bushra Riaz — Member
Chief Librarian, Lahore University of Management Sciences

Prof. Dr. M. Ashraf Chughtai — Member
University of Engineering & Technology, Lahore

Mr. Sarfaraz H. Chishti — Member
Deputy Director (Academics)
Pakistan administrative Staff College, Lahore

Mr. Khalid Mahmood Malik — Member
Lecturer, Department of Library Science, Punjab University

Mrs. Robina Tabassum Member
Librarian, Aitchison College, Lahore

Mr. Haseeb Ahmad Piracha Member
Librarian, Department of Geology, Punjab University

Mr. Muhammad Iqbal Member
Treasurer, PLA (Punjab Branch)

Role of the Program Committee is:

- To prepare curriculum and courses of the training programs.
- To devise programs for achievement of the Centre's objectives.
- To dec e on training schedules and division of work.
- To mak decisions regarding admission of trainees.
- To prep brochures, forms, and other publicity materials.
- To reviev accounts and their annual audit reports of the Centre.
- To provid free consultancy service for requesters if he/she is an alumni or re istered member of the Centre.

During the last three years, various meetings of the Managing Committee and the Program Committee were held. All the members actively participated in the business of the meetings.

The Computer Centre also hired a part-time Centre's Assistant who manages all the routine works and looks after the computer laboratory.

FACILITIES

The Centre is equipped with eleven IBM-compatible personal computers, four printers, four stabilizers, three data switches, an overhead projector, a white board, and a liquid crystal display unit. These are the most modern facilities for a computer laboratory anywhere in Pakistan. 20 trainees can be easily accommodated in the class. There is also a well-furnished office of the Centre.

Various instructional methods such as lectures, demonstrations, discussions, practical assignments, etc. are employed in teaching. Reading materials, floppy diskettes, and other stationery are also provided to the trainees by the Centre.

During the studied period, most of the hardware maintenance was done by the Centre's Assistant. For this purpose, he attended a 2-months course on computer hardware repair that was funded by the Centre.

COURSES CONDUCTED

By the end of 1995, thirteen courses have been conducted at the Centre. The courses were of three kinds. Firstly, the Centre has regularly been offering its core course called *Certificate in Library Automation*. Secondly, there were advanced courses only designed for alumni of the Centre. Some special courses were also offered which were meant for specialized purposes. The detail of the courses conducted is given here in chronological order:

1. Certificate in Library Automation (1st course)

The very first course at the Centre was conducted from November 2, 1992 to March 15, 1993. It was of 18 weeks duration. Most of the participants were experienced librarians of different libraries in Lahore. 7 out of 20 trainees were only from Punjab University. The course description was:

- Fundamentals of computers and DOS.
- Word-processing using MS-WORD ver.5.5.
- Spreadsheet management using LOTUS-123.
- Database management using dBase III+.
- Library database management using CDS/ISIS

Among the faculty, there were Mr. Faisal Afzal Khan (M.B.A., B.Sc. in Computer Engineering) and Ch. Javed Iqbal (Technical Services Librarian, Lahore University of Management Sciences).

2. Certificate in Library Automation (2nd course)

A special morning course of 10 weeks duration was designed in summer vacations for the professionals working outside the city. It was held from June 15, 1993 to August 30, 1993 with four hours class work five days a week. Out of 15 participants, only 4 were from other cities. One was from Bahawalpur also. Course contents were changed. Word-Perfect was used as word-processing and LOTUS-123 was also replaced by Quattro-Pro. The faculty was altogether changed. It included Prof. Dr. M. Ashraf Chughtai (Dept. of Electrical Engineering, University of Engineering & Technology), Mr. Sarfaraz H. Chishti (Librarian, Pakistan Administrative Staff College), and Mr. Khalid Mahmood Malik (Lecturer, Dept. of Library Science, Punjab University).

3. Two Weeks Course for Library Science Students

On the request of the Chairman, Department of Library Science, University of the Punjab, this two weeks course was designed specially for

the students of M.L.Sc., class. The course was held from 18th to 30th September, 1993 and Mr. Khalid Mahmood Malik, Lecturer of the Department was the course instructor. Timings of the course were two lectures of 90 minutes each for 12 working days. Course contents included DOS and MS-WORD. 46 students attended this course without any course fee.

4. Planning and Implementation of Automated Library Systems

This four-weeks course was sponsored by NLDP and USIS. It was held from October 2-28, 1993. Dr. David N. Nelson from Texas A & M University was the instructor. He introduced some new library packages like Procite and Minisis. In this course the participants were also given the opportunity to search in CD-ROM versions of LC MARC records and DDC-20. For this purpose the class visited the American Centre Library, Lahore. The course was attended by 10 senior librarians. Two eminent persons were the Chief Librarian, Punjab Public Library, Lahore and the Chief Librarian, Baha-ud-Din Zakariya University Library, Multan.

5. Certificate in Library Automation (3rd course)

It was of 17 weeks duration and held from November 6, 1993 to March 2, 1994. The course was attended by 17 librarians.

6. Certificate in Library Automation (4th course)

It was of 16 weeks of duration and held from 1st March to 21st July, 1994. The course was attended by 24 participants. Most of them were the students of library science recently appeared in the M.L.Sc. examination. LAMP was first time included in the course contents. Visits of automated libraries were also arranged for the participants. The class visited LUMS Library and the Quaid-e-Azam Library and got practical knowledge of the software used in these libraries and discussed the problems in automating the library procedures.

7. Library Automation and Management Programme (LAMP)

This one-week course was sponsored by NLDP and was conducted from 7th to 12th May, 1994. Mr. Misbah-u-Rehman, Programmer of NLDP and Mr. Khalid Mahmood Malik were the resource persons. It was attended by 15 trainees including two computer programmers. A uniform library software for Pakistani libraries made by NLDP was introduced to the participants. Hands-on practice was provided on the use of LAMP.

8. Library Automation and Management

This four-weeks course was sponsored by NLDP and held from 17th July to 11th August, 1994. The course was attended by 16 persons and most of them were the M.L.Sc students of Punjab University. Mr. Khalid Mahmood Malik was the course instructor. The course contents included Fundamentals of Computers, DOS, Introduction to Library Automation, Introduction to CDS/ISIS, LAMP and SERNET.

9. Certificate in Library Automation (5th course)

It was of 16 weeks of duration and held from 12th September to 29th December, 1994. The course was attended by 24 participants.

10. Advanced course on the use of CDS/ISIS

This course was specially designed for the Centre's alumni who were practically using CDS/ISIS for automating their libraries. This two-weeks course was held from 2nd to 13th April, 1995. Advanced techniques in using CDS/ISIS were taught by Khalid Mahmood Malik. It was attended by 14 librarians. Two participants were sponsored by NLDP. One of the participants was the instructor at PLA Computer Training Centre, Karachi. To get the practical knowledge of using CDS/ISIS and LAMP on local area network (LAN), the participants visited the Library of Punjab Legislative Assembly. LAN Manager of the Assembly delivered a comprehensive lecture on the topic.

11. Library Automation and Management

This four-weeks course was sponsored by NLDP and held from 22nd April to 18th May, 1995. The course was specially designed for the students of Department of Library Science, Punjab University. It was attended by 21 students. Mr. Khalid Mahmood Malik was the course instructor. The course contents included Fundamentals of Computers, DOS, Introduction to CDS/ISIS, and LAMP.

12. Certificate in Library Automation (6th course)

This morning course of only 10 weeks duration was designed in summer vacations for the professionals working outside the city, especially in college libraries. It was held from 18th June to 24th August, 1995. Six out of 15 participants were from outside Lahore. Three participants were from the

Quaid-e-Azam Library, Lahore. Punjab Legislative Assembly Library and the Quaid-e-Azam Library were visited by the participants.

13. Certificate in Library Automation (7th course)

This 16-weeks evening course was held from 1st October, 1995 to 18th January, 1996. It was attended by 22 librarians. Among the instructors, Dr. M. Ashraf Chughtai was replaced by Mr. Haseeb Ahmad Piracha, Librarian, Institute of Geology, Punjab University, Lahore.

TRAINEES' PROFILE

From November 1992 to January, 1996, thirteen courses have been conducted at the Centre out of which seven were the 'Certificate in Library Automation.' 259 persons attended the courses. Among the participants, 43 (16.6%) were female and 216 (83.4%) were male. Most of the participants were the students of Library Science which were 95 in number (36.7%). At the second rank there were 43 Special Librarians (16.6%). College Librarians were 33 (12.6%), Public Librarians 30 (11.6%), University Librarians 12 (4.6%), and others were 46 (17.6%). The others included two Library Science Teachers, three Officers from Directorate of Public Libraries, Punjab, two Computer Programmers, 29 un-employed professional degree holders, and some non-librarians.

Organization wise analysis shows that the Quaid-e-Azam Library is at number one whose 14 professionals attended various courses at the Centre. Second is the Punjab Public Library. Its 8 librarians benefited from the Centre. Punjab University Central Library can be placed at third position whose 5 professionals attended the courses.

According to a survey conducted by the author, by the end of 1995, 149 (57.5%) Centre's alumni are involved in the automation process of their libraries and are practically using the computer.

INSTRUCTORS' PROFILE

During the period studied, eight instructors taught at the Centre. Total study period is 120 weeks. The author's participation as instructor is 54 weeks. Mr. Sarfaraz H. Chishti participated for 27 weeks and Dr. M. Ashraf Chughtai taught at the Centre for 13 weeks.

CONSULTANCY SERVICES

One of the Centre's functions is to provide free consultancy services to its alumni or other librarians regarding the automation of their libraries. During last three years, on behalf of the Centre, Mr. Khalid Mahmood Malik provided more than 25 libraries with consultancy services throughout the province. The consultancy was provided in hardware and software selection, developing in-house library packages, and specially in proper running of CDS/ISIS and LAMP in libraries. The Centre's Assistant, Hafiz Abdul Manan also visited a number of libraries to help in the problems with hardware and software.

During the period, PLA completed the automation project of the Punjab Legislative Assembly Library. The Centre's computer laboratory was used for the training of the project team. The computers, data-show and other hardware were also used in the seminars, courses, workshops and lectures arranged by PLA, PULSAA or NLDP elsewhere in the city.

CONCLUSION

The establishment of the PLA Computer Training Centre is indeed a major breakthrough in library and information science education in the Punjab province. During first three years of its functioning, the Centre produced a reasonable number of librarians trained in different aspects of library automation. By the end of 1995, there are 50 to 60 libraries only in Lahore which have been automated or are planning to use new information technology. Most of them started their computerization projects in last three years. Besides this, libraries at Multan, Bahawalpur, Gujranwala, Sahiwal and Faisalabad are also being automated. Among all five PLA Computer Training Centre's throughout the country, the Lahore Centre is running most successfully. The Centre's facilities were mostly utilized by the library professionals and students of library and information science. The donor agency, NLDP, also acknowledged the smooth operation of the Centre by including the following sentence in one of its reports:

> The Lahore Centre is functioning extremely well and is totally self sufficient.

For further advancement of the Centre, some suggestions are given here:

- Easy readings in library automation should be prepared under the supervision of the Centre.
- Suitability of different library packages should be examined and necessary recommendations should be issued by the Centre.
- In addition to CDS/ISIS and LAMP other library software, i.e., INMAGIC, etc. should be taught in the Centre.

- Special courses for para-library professionals should be designed.
- Centre's laboratory should be equipped with local area network (LAN), CD-ROM and E-mail.
- Advanced courses on library networking, on-line information retrieval procedures, library system analysis, microcomputer hardware, using CD-ROM data-bases, and such other topics should be conducted.
- For regular grant of the Centre, Punjab Library Foundation and other donor agencies should be contacted.
- Students of library and information science should be accommodated on subsidized course fee.
- Centre's Alumni Association should be established and its meetings should be arranged from time to time.
- A quarterly newsletter on library automation should be published by the Centre.

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Library and Information Services in Pakistan: A Review of Articles Published in Foreign Journals*

INTRODUCTION

Pakistan came into being as the result of the partition of India in 1947, when the provinces of Sind, Balochistan. North-West Frontier and the parts of Punjab and Bengal having Muslim majority constituted as a separate country. Pakistan had two wings, West Pakistan and East Pakistan, each separated from the other by a distance of about 1600 kilometers of Indian territory. East Pakistan became an independent country in December, 1971 and is now called Bangladesh. Pakistan (former West Pakistan) has a total area of 796 095 sq. km, with a population of 131.5 million in 1994. It is a federal Islamic republic and the per capita GNP in 1991 was US$400. This country has progressed through several development plans and has made substantial progress in several vital areas such as education, scientific and technological research, industrialization, rural uplift and several other areas of socio-economic development. Overall literacy is estimated to be 34% in 1992 and the government has extensive programmes for the eradication of illiteracy in the country. The infrastructure of education and research consists of schools, colleges, polytechnics, universities, laboratories and research institutes. There are presently 23 universities, 691 colleges and a fairly large number of research institutes and laboratories in the country.

Hamid (1992) estimated the number of libraries in Pakistan to be 1500 which are employing 3000 professional librarians. There are six library schools offering library and information science education at postgraduate level. The 2-year academic programme is divided into 1 year diploma/ bachelor and 1 year Master degree. Total number of diploma and Master degree holders was estimated in 1992 to be 3304 and 2349, respectively.

RURPOSE

Library research in Pakistan started when Asa Don Dickinson, an American, wrote a textbook, *Punjab Library Primer* that was published in 1916 by the University of the Punjab. Afterwards, a number of books, reports and proceedings on various aspects of Pakistani librarianship were published.

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* Source: "Library and Information Services in Pakistan: a Review of Articles Published in Foreign Journals." *The International Information & Library Review (IILR)*, vol. 28, no. 4 (December 1996): 383-405.

A remarkable research was carried out in six library schools in the form of Masters theses. Bibliographies of library literature in Pakistan were compiled time to time and some articles on this topic were also published.

The most popular media of publishing is the periodicals. Why are journals mostly used in research activities? Budd (1988) answers this question:

> A primary means of scholarly communication in virtually all disciplines (and certainly in library and information science) is the journal. The journal offers authors and readers some advantages over the monograph: the opportunity for dissemination of a larger number and broader scope of issues and questions; intensive study of very specific questions or aspects of large problems; and the timely publication of intended communication.

Librarians of the area that is now called Pakistan understood the importance of library journals and *Modern Librarian*, the first professional journal, was published in Lahore in 1930 as a monthly organ of the Punjab Library Association. *Pakistan Library Bulletin* started its publication in 1968 and is being published regularly. Some other library journals are also published in the country. Besides the literature published within the country, there is a good number of international library journals published throughout the world. Bottle and Efthimiadis (1984) noted a cumulative total of 1545 professional journals currently published in 1983. Reviewing the period 1860-1933, they calculated that the number of journals for the profession doubles every 13.8 years. Since the existence of Pakistan, local and foreign authors have been contributing on Pakistani librarianship in the journals published outside Pakistan. How much research on this topic was published? Bibliographies and other studies published in the country did not cover these articles.

The purpose of this study is to investigate the contribution on the different aspects of library and information services in Pakistan in the form of articles published in professional journals of the countries other than Pakistan. How many articles were published? Who wrote more on this topic? What are the institutional affiliations and occupations of published authors? What is the trend of collaboration among authors of Pakistani librarianship? When and where were the articles published? Which journals published more articles? In which language were the articles published? What is the coverage of articles in different abstracting services? What are the subject contents of the articles with regard to different aspects of Pakistani librarianship? By answering these questions this study will present on one hand a subject review of the articles and a comprehensive bibliography on the topic on the other.

SCOPE

Only articles indexed/abstracted in the following abstracting services are included in the study:

- *Library and Information Science Abstracts – LISA* (UK based, covers 550 journals from 60 countries, 1969 to the present, updated monthly)
- *Information Science Abstracts – ISA* (USA based, covers 300 journals, 1966 to the present, updated monthly)
- *Library Science Abstracts – LSA* (UK based, published quarterly from 1950-1968, in 1969 changed into LISA)
- *Educational Resources Information Center – ERIC* (USA based, covers 750 journals, 1966 to the present, updated monthly)

Items other than articles, i.e. books, reports, dissertations, conference proceedings, research projects, etc. abstracted in these abstracting services are not included in the study. Other possible sources of information were also searched, and the reviewer made every effort to find such articles published abroad. These sources include published indexes like *Library Literature*. Senior professionals were also consulted in this regard. In spite of all efforts there is a chance that some articles may have been missed in this review. Two types of articles are included: (1) articles written particularly on the whole or any aspect of Pakistani librarianship; (2) articles that do not particularly deal Pakistani librarianship but discuss it partly.

Articles published in the Pakistani journals are not included. Articles particularly written on East Pakistan and similarly articles published in *Eastern Librarian* (Published from East Pakistan now Bangladesh) are excluded. The time period covered in the study is 1947-1995.

METHODOLOGY

Approach to the abstracting services in the field of library and information science was not possible in Pakistan. The author, during his stay at the Department of Library & Information Science, Haagse Hogeschool, The Hague in April 1996, searched for required articles in online databases of LISA, ISA, and ERIC provided by the DIALOG. Descriptors like Pakistan, four provinces of the country, big cities, etc. were searched (free-text) in the databases. The abstracts of articles were downloaded. For searching of articles abstracted in LSA the author used the British Library Information Sciences Service (BLISS) at London. The required abstracts were photocopied. The decision of inclusion of the articles in this study was taken after having a careful look into the abstracts. In order to be fully aware

of the topic, most though not all of the articles included in the study were physically seen by the author. Findings of the study were analysed and tabulated in Pakistan. For more information about LIS journals included in the study, various editions of *Ulrich's International Periodicals Directory* and other available reference tools were consulted.

FINDINGS

After searching in four abstracting services 97 items were classified as journal articles falling in the scope of the study. Three articles were published twice in six different journals. For the purpose of this study those three articles were considered as six independent entries. See Bibliography for a full list of the articles included in the study.

TABLE I

Coverage of articles by abstracting services

Rank	Name of abstracting service	Number of articles abstracted	Percentage
1	Library and Information Science Abstracts (LISA)	74	76.29
2	Information Science Abstracts (ISA)	28	28.87
3	Library Science Abstracts (LSA)	14	14.43
4	Educational Resources Information Center (ERIC)	7	7.22

Coverage of Articles by Abstracting Services

The maximum number of articles, 74 (76.29%), were abstracted in LISA, followed by ISA which abstracted 28 (28.87%) articles. LSA and ERIC abstracted only 14 (14.43%) and seven (7.22%) articles, respectively (see Table I). Only 19 (19.59%) articles were abstracted in more than one abstracting service. Of those 19, 14 (14.43%) were included by two services while five (5.15%) were covered by three services.

Publishing Activities

69 (71.13%) articles were written particularly on Pakistani librarianship, and 28 (28.87%) articles contained partial information about Pakistan. In these 28 articles, most were written on South Asia, developing countries and Third World countries.

Collaborative Authorship

A total of 66 authors were counted. Four (4.12%) articles were found to be anonymous. Of the 93 authored articles, only seven (7.53%) had more than one named author. The majority of the articles (92.47%) had a single author. Two authors were found in four (4.3%) articles. The maximum number of authors in one article was four (see Table II).

TABLE II

Collaboration among authors

Number of authors	Number of articles	Percentage
1	86	92.47
2	4	4.30
3	2	2.15
4	1	1.08
Total:	93	100.00

Affiliation and Occupation of Authors

Finding the type of institution with which each author was affiliated was not possible in many of the cases. According to a rough estimate, based on the personal knowledge of this reviewer, 25 (37.88%) authors were affiliated with Pakistani libraries and LIS schools. The other 41 (62.12%) were foreigners (see Table III). Of these, a large number of authors were from UK and India. Information about other authors is not available. Of 66 authors, 12 (18.18%) contributed more than one article. These 12 authors wrote a total of 48 (49.48%) articles. The six mostly published authors contributed

TABLE III

Affiliation of authors

Affiliation	Number of authors	Percentage
Pakistan	25	37.88
Other Countries	41	62.12
Total:	66	100.00

36 (37.11%) articles. Of these six authors, five were Pakistani and one was Indian. Of the six mostly published authors, five were library and

information science teachers and only one worked as university librarian (see Table IV). Only two authors contributed more than 10 articles each, and both were the faculty members of library school at Karachi. In a study of five international LIS journals conducted by Raptis (1992), out of 184 authors, 59 (32.07%) were LIS teachers. According to another survey of sixteen journals conducted by Buttlar (1991), most of the authors (18.69%) were faculty of LIS schools.

TABLE IV

Authors published most

Rank	Name	Occupation	Number of articles
1	Syed Jalaluddin Haider	LIS faculty	12
2	Anis Khurshid	LIS faculty	11
3	Attaullah	University librarian	4
4-6	Mumtaz A. Anwar	LIS faculty	3
4-6	P. B. Mangla	LIS faculty	3
4-6	Sajjad ur Rehman	LIS faculty	3

Language of Articles

Most of the articles 94 (96.91%) were published in English. The other three articles were in German, Portuguese and Russian (see Table V). A large number of articles published in English language is due to the reason that the official language of Pakistan is English. Almost all of the Pakistani authors who went abroad for education purposes went to English-speaking countries like the USA, UK and Australia. They wrote for foreign journals published in English. Other authors from abroad who had any concern with Pakistani librarianship and came to Pakistan for various assignments were also from USA and UK. They also wrote on the topics in which they had experience.

Publication Year of Articles

The span of 49 years was divided into 9 groups. In the first group of 9 years only one article was published. That article was published in 1952. After 1980 there was a trend of increase in the publication. The maximum number of articles 23 (23.71%) were published during 1991 to 1995 (see Table VI). If we examine the data according to the number of published articles during a single year, 1988 and 1994 will be ranked at the first two

TABLE V

Language of articles

Language	Number of Articles	Percentage
English	94	96.91
German	1	1.03
Portuguese	1	1.03
Russian	1	1.03
Total:	97	100.00

when the number of articles were 8 each. If we divide the total period studied, i.e., 49 years into two equal parts, we will find that only 20 (20.62%) articles were published during the first half while the rest 77 (79.38%) were published in the second half.

Coverage of Articles by Journals

It was found that the total 97 articles were published in 52 journals. The number of articles published in various journals varied. Only 15 (28.85%) journals published 60 (61.86%) articles. The other 37 (38.14%) articles were published in 37 (71.15%) journals. *International Library Review* is the first in the ranked order which published the maximum number of 16 articles. Afterwards the *International Library Review* changed its title as the

TABLE VI

Distribution of articles by year of publication

Year	Number of articles	Percentage
1947-1955	1	1.03
1956-1960	9	9.28
1961-1965	2	2.06
1966-1970	5	5.15
1971-1975	10	10.31
1976-1980	8	8.25
1981-1985	17	17.53
1986-1990	22	22.68
1991-1995	23	23.71
Total:	97	100.00

TABLE VII

Journals that frequently Publish articles on Pakistan

Rank	Journal Title	Country	Number of articles
1	International Information and Library Review	UK	16
2-3	Libri	Denmark	7
2-3	Unesco Bulletin for Libraries	France	7
4	Information Development	UK	5
5-7	Herald of Library Science	India	3
5-7	Scientometrics	Netherlands	3
5-7	Special Libraries	USA	3
8-15	Asian Libraries	Hong Kong	2
8-15	Indo-Pacific Exchange Newsletter	*	2
8-15	Journal of Library History	USA	2
8-15	Library Journal	USA	2
8-15	Library Review	UK	2
8-15	Quarterly Bulletin of the International Association of Agricultural Information Specialists	France	2
8-15	SALG Newsletter	UK	2
8-15	Third World Libraries	USA	2

* Country unidentified

International Information and Library Review. The second and third are *Libri* and *Unesco Bulletin for Libraries* which published 7 articles each (see Table VII).

Country of Publication

The journals having articles on Pakistani librarianship were published from 12 different countries. The country of publication of 4 journals having 5 articles could not be identified. Of 92 articles 77 (83.7%) were published from only 5 (41.67%) countries. The maximum number of articles 32 (34.78%) were published from UK. 22 (23.91%) articles were published from USA and 9 (9.78%) were from France (see Table VIII).

Subject Contents of Articles

Articles were classified in 16 broad subject categories. Library & information science education and research as a subject occupied a maximum number 18 (18.56%) of the articles. The second and third most popular

TABLE VIII

Distribution by country of publication

Rank	Country	Number of Articles	Percentage
1	UK	32	34.78
2	USA	22	23.91
3	France	9	9.78
4-5	Denmark	7	7.61
4-5	India	7	7.61
5-6	Hong Kong	4	4.35
5-6	Netherlands	4	4.35
7-9	Germany	2	2.17
7-9	Singapore	2	2.17
10-12	Brazil	1	1.09
10-12	Fiji	1	1.09
10-12	Russia	1	1.09
	Total:	92	100.00

TABLE IX

Subject coverage

Rank	Subject	Number of articles	Percentage
1	Lib. & inf. sc. education & research	18	18.56
2	Special libraries & inf. Services	17	17.53
3	Lib. & inf. Services	15	15.46
4	Inf. technology & lib. Automation	8	8.25
5	Technical services	7	7.22
6-7	Academic libraries	6	6.19
6-7	Lib. materials & collections	6	6.19
8	Bibliography & bibliometrics	4	4.12
9-11	Archives	3	3.09
9-11	Cooperation/Resource sharing	3	3.09
9-11	Public libraries	3	3.09
12-13	Publishing & book trade	2	2.06
12-13	Reading promotion	2	2.06
14-16	Biography	1	1.03
14-16	National libraries	1	1.03
14-16	User education	1	1.03
	Total:	97	100.00

subjects were special library services and general library services which were described in 17 (17.53%) and 15 (15.46%) articles, respectively. These three subjects covered 50 (51.55%) articles. See Table IX for the details of 16 subject categories. The study by Raptis also showed LIS education as most

popular subject in the LIS journals while in Buttlar's study the most popular subjects were cataloguing and automation. LIS education was placed at fourth position. See *Appendix 1* for a brief subject review of the articles included in the study.

DISCUSSION & CONCLUSION

In the databases having a large number of entries (e.g. LISA contained 133,796 records and ISA contained 160,000 records in 1993) only 97 records were found which contained information on Pakistani librarianship. This amount of research can not be considered satisfactory on this topic. What is the reason of this poor result? Basically it is the responsibility of Pakistani professionals to do research on the topic of Pakistani librarianship and make their articles published in the international journals, while the study reveals that only 25 Pakistani authors worked in this field. Haider (1978) discussed the factors responsible for retarding the growth and expansion of research activities in the country. Lack of planning and coordination, use of unsatisfactory research techniques, lack of funds, and the lack of interest and encouragement among library professionals are the major obstacles. Usmani (1986) added that the lack of recognition of librarianship as a profession affected the research activities in Pakistan. Rizvi (1987) also enlisted the factors affecting library research in the country. Lack of trained persons in library research was a major hurdle. Rizvi wrote that the first Masters programme started in 1962 (after 15 years of the birth of Pakistan) at Karachi. In 1974, Punjab and Sind Universities started Masters programmes. Research methods were taught as a compulsory course in Masters programme. After the initiation of Masters programmes these three library schools started to produce some research. The present study also confirms that there is an increase in the research activities after 1980. Rizvi also discussed some other problems as lack of literature required for research, lack of cooperation from the individual librarians (people do not fill the questionnaire), and the lack of the local periodicals in the field of librarianship. Muhammad Asghar (1992) discussed the major problems in library research as the lack of opportunities for proper training, appropriate guidance, availability and access to information sources, financial assistance and sponsorship, encouragement, publication or dissemination of research findings, and personal interest and initiative.

The study shows that the major share of publication activity is accounted for by LIS faculty and, due to this, the most popular subject is always LIS education. The LIS faculty at Karachi University contributed more research in international journals. There is a fair number of special

libraries in the country and their condition is comparatively better. The second most popular subject is special libraries which include medical, agricultural, law, and science and technology library and information services. To introduce the library situation in Pakistan to the world professional community the articles of general nature were written in a large number. Continued interest in automation shows the ongoing technological innovations in Pakistani libraries.

Most of the articles (96.91%) which appeared in the journals published in English language. Also most of the articles were published in English speaking countries, i.e., the UK, and USA. There are three reasons for this. Firstly most of the LIS periodicals are published from these countries. Secondly, English is taught as second language in Pakistan and the official communications are also in English. So the professionals can easily write in English. Thirdly, it is worth mentioning that the mostly published authors in this study have been in these English speaking countries for study purposes and have more acquaintance with the journals published in these countries.

The promotion of research activities in the field of librarianship in Pakistan is direly needed in this era of communication. Anwar (1982) suggested that the research carried out by the Masters students should be published in international journals. The government of Pakistan should constitute a National Research Council for Librarianship to investigate the problem areas and to assign the research projects to the experts. Pakistan Library Association and the University Grants Commission can play an important role in the coordination of research activities in the country. There should be refresher courses for working librarians to teach them research methods and they should be encouraged to do research in the field of librarianship. Some international journals are specifically meant for developing countries. Pakistani researchers should approach these journals and send their research findings for publication.

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APPENDIX 1. SUBJECT REVIEW

A review of the articles included in the study is presented here. This review gives a brief historical background of the library and information services in Pakistan through various time periods. The arrangement is alphabetic according to the major 16 subjects. The reference of the article's entry in the bibliography is given with each author.

Academic Libraries

In 1971, Anwar[19] wrote on the secondary school libraries in Pakistan. Christine[28] described the experiences of a school librarian working at Islamabad. Haider[44] discussed the condition of university libraries in 1975. There were 8 university libraries in Pakistan with a total of 800,000 volumes. Haider[45] revised his paper on university libraries that was again published in 1986. In this paper, he suggested the ways of improving cooperation among university libraries. Mahmood ul Hassan[60] described the services of the Allama Iqbal Open University Library. Sajjad ur Rehman[83] analyzed the book availability in Punjab University Library and compared the results of the study with the surveys conducted in US academic libraries.

Archives

Moir[69] discussed the provision of archives in Pakistan. He described various departments of government which held the archives. In 1990, Moir[68] again reported a survey of the administration, care and accessibility of

district records in Pakistan. Slavin[89] gave an account of the activities of the National Archives of Pakistan. Problems faced by the department were discussed.

Papers on the conservation of archives are given under the heading "Technical Services".

Bibliography & Bibliometrics

Rafia[77] discussed the developments in bibliographic control in Pakistan focusing on the aspects of legal deposit, registration of publications and copyright, the national bibliographical agency, and retrospective and current national bibliographies. Qurashi[75] analyzed the output of two prolific research groups in scientific discipline. Again Qurashi[74] wrote on the publication rate of some university groups in various countries including Pakistan. Arunachalam, Srinivasan and Raman[20] discussed the collaboration among Asian scientists in scientific research.

Biography

Anis Khurshid[16] presented an appreciation of the library career of Abdul Moid (1920-1984), who fought for and promoted the cause of librarianship in Pakistan. Abdul Moid served University of Karachi Library from 1952 to 1973. One of his major achievements is the establishment of the Pakistan Library Association in 1958. He also worked in Nigeria.

Cooperation / Resource Sharing

Begg[25] presented a paper on the development of resource sharing in Pakistan at the 'International Conference of Directors of National Libraries on Resource Sharing in Asia and Occeania, Canberra, 1979.' Anis Khurshid[14] discussed the situation of resource sharing among university libraries and suggested the cooperation in the fields of union lists of serials, union catalogues, photocopying and loan of library resources, acquisition of foreign periodicals, etc. Attaullah[23] proposed a new mechanism and framework for resource sharing among libraries in Pakistan.

Information Technology & Library Automation

This subject is quite new in Pakistan and the first article on this topic appeared in the literature in late 1980s. During the span of eight years, eight papers have been published in international journals. Horne[50] examined the varying degrees of application of information technology to information services in the different regions of the world. Primarily the focus was on the

use of international services, prevalence of user interface software, and development of national and regional networks. Attaullah and Johnson[21, 22, 24] described the efforts made to modernize and computerize the NWFP Agricultural University Library. Their two articles on this topic were published in three different journals. Royan[81] presented a paper at the Pakistan Library Association Seminar on 'Information for Development', Lahore, 1992. He discussed the importance of the use of new technology in information handling. Hassan[47] used data from a number of case studies to identify the major environmental constraints that influence the introduction of information technology in Pakistan. Khalid[52] described the different foreign and local computer software packages being used in Pakistani libraries. He discussed the problems in library software development in Pakistan.

Library & Information Science Education & Research

The first paper on library education in Pakistan was written by Anis Khurshid[12] in 1961. The four library schools in West and East Pakistan were producing eighty graduates each year for country's five hundred libraries. There was lack of co-ordination and uniformity between the schools and between the libraries. In 1970, Anis Khurshid[15] wrote on the standards of library education in Burma, Ceylon, India and Pakistan. In 1971, an article[57] was published on the history of library education in Pakistan. Bowden[26] gave the details of an experimental course at Loughborough University of Technology to educate the teachers of library science from developing countries. In a 1-year Masters in Library Science course, among 7 students, one was from Pakistan. The course was mainly sponsored by Unesco. Qureshi[76] described the history of education and training of librarians in Pakistan from the early 20th century with some thoughts and suggestions for the future.

Mangla[63] explained the need for manpower training for information handling and described the different categories of personnel for this purpose. He outlined the training programmes in India, Pakistan, Bangladesh and Iran. Rafia[78] discussed the facilities of library education and training for professionals and para-professionals in Pakistan. The lack of teaching staff and professional literature created serious problems. Anis Khurshid,[10] in 1987, reviewed the growth of library education with special reference to five universities in Pakistan. Feather and Smith[32] described a continuing education program which they experienced in Pakistan.

Ahmed[3] gave an account of library training in Pakistan, Iran, Egypt, Sudan and some other Arab countries. Sajjad ur Rehman[84] examined the

extent of coverage and nature of courses relating to information policy in the curricula of 48 library and information science programmes in North America and 3 Asian countries (Malaysia, Pakistan and Saudi Arabia). Mangla[61,62] wrote on the LIS education facilities in India, Pakistan, Bangladesh and Sri Lanka. His paper was published in two journals. Sajjad ur Rehman[82] evaluated the faculty of six graduate programmes of library education in Pakistan.

Haider[43] described the status of research in the field of library science in Pakistan. Anwar[18] reviewed the research carried out by Masters degree students at Punjab University, Department of Library Science 1975-1981. Harvey[46] examined library periodicals published from India, Pakistan, Malaysia and Taiwan. Haider[38] reviewed the library literature of Pakistan, including library periodicals, conference proceedings, bibliographical aids, reference works, master theses, and plans and surveys.

Library & Information Services

In 1957, Heyman[49] discussed the role of Asia Foundation in development and improvement of library facilities in fifteen Asian countries. A grant was made to publish a "Guide to Pakistan Libraries, Learned and Scientific Institutions and Societies." In 1959-1960, three articles were published on the general library situation in Pakistan. Waller[93] gave an introduction to Pakistani libraries, including a description of Liaquat Memorial Library, Karachi, and library education and research in the country. Khan[55] discussed the problems faced by the libraries of a newly born country. Owen[73] described the situation of university libraries, national library, library science education and professional associations. Finance, accommodation and staff were the major problems of libraries. Khan's paper[54] mainly focused on the public libraries in the country. However, some information was also given on academic libraries. Anis Khurshid's article[8] on the general situation of librarianship in the country was published in 1971.

Haider[40] and Anis Khurshid[9] painted a picture of library development in Pakistan during the decades of 1970s and 1980s, respectively. Anis Khurshid estimated that Pakistan had 1261 libraries and 700 box libraries in 1981 which were increased to 3700 by 1988. In 1981, in another article, Anis Khurshid[13] discussed the problems in the proper development of libraries in Pakistan. He listed lack of coordinated library infrastructure, inadequate bibliographical control, lack of reviewing arrangements and limited use of books as the main sources inhibiting the book development in the country. Grover[33] described the history of library development in Pakistan including copyright ordinance, the contribution of foreign experts, the establishment of

PASTIC, bibliographical activities, the National Archives, the International Book Exchange Centre, library associations, and university and special libraries. Yasmin[97] made an account of the working of some important information centres of Pakistan. Heitzman[48] discussed the information systems developed in the third world countries. He described the problems in developing information infrastructure in South Asian countries including Pakistan. Haider[37] wrote on the library professional associations in the country. Methven[64] discussed the plan for library development in Pakistan.

Library Materials & Collections

In 1967, Lahood[56] reviewed the bibliographic coverage for newspapers in different directories. Among others the writer described the newspapers indexes which also indexed newspapers published in Pakistan. Schlie[86] described a study of the use of the US patents by developing countries. The study was undertaken by the University of Denver Research Institute in collaboration with the Pakistan Council for Scientific and Industrial Research (PCSIR). The US patents used by the scientists at PCSIR in designing a particular equipment were studied. Wageman[92] listed reference sources with annotations on South Asian countries including Pakistan.

Burlingham[27] wrote on the status of South Asian collections maintained by the American academic libraries. These collections including Pakistani publications were mainly in English and the regional languages to cater for the needs of the people from South Asia. Wells[94] described South Asia Microfilm Project (SAMP) at the Centre for Research Libraries (CRL), Chicago, Illinois which catalogued, stored and lent microfilm resources to the project's member libraries. SAMP started functioning in 1967. In 1990, Anis Khurshid[11] updated his earlier survey of library resources in Pakistan. He mentioned that there were 6034 libraries in the country holding 13,354,500 volumes.

National Libraries

Akhtar[4], the Director General of National Library of Pakistan contributed a paper in an issue devoted mainly to the subject of national libraries. He described the opening of NLP and noted its functions, resources, readers' services, application of modern technology, conservation of library materials and international relations.

Public Libraries

Mahindasa[59] described the public library development in some African and Asian countries. Pakistan is one of them. Anis Khurshid[5] presented a paper at INTAMEL Meeting 1973, India on the topic of public library system in the city of Karachi. Muhammad Aslam[71] gave a description of rural libraries in Pakistan.

Publishing & Book Trade

The Agreement on the Importation of Educational, Scientific and Cultural Materials of 1950, signed by 30 Unesco Member States, was discussed in an article[91] published in 1952. According to that agreement there was no duty on printed books, newspapers and periodicals. Some effects of the Agreement on various countries, including Pakistan, were given. Ali[5] reported a meeting, held in Karachi, 1981 to discuss the needs of developing countries to provide books of the right quality and quantity and at prices people can afford.

Reading Promotion

Diehl[31] gave an account of various schools and colleges in Pakistan and India and recorded the existence of libraries and the use of books. The mass need for books did not exist in South Asia. The writer recommended a complete change in the examination system to promote the need of books. Stelmakh[90] described the World Book Congress which was arranged by Unesco to stress the importance of reading as a means of both individual and social development. The writer also mentioned regional book centres set up by Unesco in Tokyo, Karachi, and Bogota.

Special Libraries & Information Services

Special libraries and information services have always been better in comparison with the other libraries in Pakistan. A number of articles were published on various aspects of special library services. In 1977, Muhammad Aslam[72] discussed the problems of 242 special libraries in the country. The author also gave some hints to improve the condition of special libraries. In 1960, Mohajir[67] described the services of Pakistan National Scientific and Technical Documentation Centre (PANSDOC) which was established in 1957 upon Unesco recommendations. Haider[41] wrote on the science and technology libraries in 1974. Rafique[79] described the services of Nuclear Science libraries in Pakistan.

Medical information services is an important area in special librarianship. In 1960, Cunningham[30] wrote about the collection and services of the library of the Basic Medical Sciences Institute in Pakistan. Haider[39] discussed the state of medical information in the country. He discussed medical education and research and gave an account of important medical libraries. Morgan[70] discussed the program and objectives of a workshop for medical librarians held at the Agha Khan University (AKU), Karachi in 1987. Abrantes, Myhre and Oliveira[2] wrote on the software programs used in primary health care. Several packages were studied. Microcomputer simulation of PHC developed by the Agha Khan University, Karachi was discussed. Husein and others[51] also wrote on the same topic in 1993.

Agricultural information is another important aspect of special librarianship. Schenck and George[85] described two collections focusing on food and feed grain. Information needs and information center activities in developing countries including Pakistan were also discussed. Haider[42] wrote on the existing resources and facilities in the field of agricultural science. Problems of agricultural libraries were also discussed. Shaheen[88] described the objectives and activities of an agricultural library strengthening project, with financial assistance of USAID. He recommended resource sharing among agricultural libraries in Pakistan. In 1995, Shaheen[87] reviewed the status of agricultural librarians in the country.

Law librarianship is also an important area. Haider's paper[35, 36] on law libraries in Pakistan was published in two journals. He examined the problems of legal information service in the country. Lindley[58] discussed the difficulties facing parliamentary libraries in developing countries including Pakistan.

Minnatullah[66] explained the need for management information system for water and sanitation agencies. He also presented a proposal for developing such an MIS.

Technical Services

In 1957, Khan[53] presented the results of a survey about the acquisition and availability of foreign literature in Pakistani libraries. Similarly Abdul Haq[1] described the problems in acquiring US scientific and technical books in Pakistan. Haider[34] discussed the policies, procedures and problems in the acquisition of scientific literature in Pakistani libraries. This paper was published in a special issue of 'Information Development' which was on the acquisition of scientific literature in developing countries.

Cataloguing of Muslim names has always been a problem. Anis Khurshid[7] discussed this issue in detail. Rait[80] described the practice of British public libraries regarding the cataloguing of Punjabi Muslim names.

Conservation of archives is a vital issue which was discussed in two papers. First article[29] gave the details of a training course held in the conservation laboratory of the National Museum of Pakistan, Karachi in 1987. The course's objectives were the conservation of official government records. Wettasinghe[96] discussed the issues of archival conservation in South Asian countries.

User Education

Anwar[17] described developments in user education since 1926, when it first became a serious study. He presented the findings of two surveys carried out to discover the extent to which college students and working scientists in Pakistan received any formal user education. He also put forward a plan for a national user education programme in Pakistan.

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Pakistani Librarianship During the 1990s: A Literature Review*

INTRODUCTION

The Islamic Republic of Pakistan occupies 796,095 sq. km. and is bounded by India, Afghanistan, China, Iran and the Arabian Sea. It was constituted on 14 August 1947 and consisted of the following territories of British India: Balochistan, East Bengal, North-West Frontier, West Punjab and Sind. In 1971 East Bengal declared itself an independent state, Bangladesh. Now the country consists of four provinces and a centrally administered Federal and Tribal Area. Islamabad is the capital city. With a density of 149.6 persons per sq. km. the population is estimated to be 131.5 million. The system of the government is parliamentary. Urdu is the national language although 48% of the population speak Punjabi. English is used in business, higher education and central government. Per capita GNP is US$410. In 1991 4532 newspapers and other periodicals were published in the country. Adult literacy was 34% in 1992. Figures for 1991-92 show that there were 119,812 primary, 8,914 middle and 10,061 secondary schools, 477 vocational institutions, 742 colleges and 22 universities. The total student enrollment in all educational institutions is about 18 million. (*The Statesman's Yearbook 1995-1996*).

According to Anis (1990) there are 6034 libraries in Pakistan out of which 4373 are box libraries. The box libraries were established in villages during 1980s under a program sponsored by the Ministry of Local Government and Rural Development in cooperation with the Asia Foundation of Pakistan (Anis 1987). The total collection of all types of libraries is 13.35 million volumes. Punjab province alone holds 40% of the books. Three cities, Karachi, Lahore and Rawalpindi-Islamabad have more than 50% of the books in the country. A directory of libraries compiled by the Pakistan Library Association lists 1767 college, public, school, national, special and university libraries in Pakistan (Khawaib 1996).

NATIONAL LIBRARY

When was the National Library of Pakistan founded? Pakistani writers give four different dates. After a detailed discussion, Anwar (1993)

* Source: "Pakistani Librarianship During the 1990s: a Literature Review." *World Libraries*, vol. 8, no. 1 (Fall 1997): 42-56.

concludes that in 1949 the Pakistan Government set up the Directorate of Archives and Libraries. The National Library was made a branch of the Directorate. According to Akhtar (1992), in 1954 the Liaquat Memorial Library in Karachi was amalgamated with the National Library and renamed the Liaquat National Library. Later, in 1968, the library was declared a legal depository under the Copyright Law of 1962. After the Capital was shifted from Karachi to Islamabad, it was decided to establish the National Library of Pakistan in the new Capital, and the Liaquat National Library was renamed Liaquat Memorial Library. Construction work for the new building started in 1982 and was completed in 1988 at a cost of Rs.130.322 million. The building, centrally air-conditioned and heated, provides a covered area of 168,844 sq. ft.

Over the past few years about 90,000 volumes have been acquired through purchases, gifts, exchanges and legal deposit. These include 522 manuscripts and over 9,400 rare books in Urdu, Arabic, Persian, and other languages. Unesco has approved the National Library of Pakistan as a depository of its publications. The Delivery of Books and Newspapers Branch has, since its establishment in 1969, received over 25,000 Pakistani publications. It also receives regularly about 650 periodicals and eighty newspapers. Four large reading halls with seating capacity for 500 persons have been provided for the study of European languages and literature, Oriental languages and literature, the Pakistan collection, and Newspapers and periodicals. A separate reading room has been established for the study of manuscripts and rare books. The National Library compiles the annual volumes of the Pakistan National Bibliography and issues a monthly *Accessions List-Pakistan* based upon the deposit of publications under the Copyright Law (Akhtar 1993). The NLP, after its designation as ISBN Agency for Pakistan in 1984, has registered 229 publishers and allotted an ISBN to 4784 books upto the end of February, 1991 (Riazuddin 1993). The new National Library was formally inaugurated on 24 August, 1993 at Islamabad by Mr. Moeenuddin Qureshi, the Prime Minister of Pakistan.

Archival materials are maintained at the federal and provincial government levels. The National Archives of Pakistan also holds private collections and will house the Freedom Movement Archives, some 100,000 documents pertaining to the All-India Muslim League. The Ministry of Foreign affairs maintains its archives independently (Anis 1993).

ACADEMIC LIBRARIES

The ten universities existing in 1981 grew to twenty-three by 1989. As far as the total collection of the university libraries is concerned, Anis (1993)

estimates it as 2,900,000 volumes, more than a fifth of all of the books in Pakistani libraries, while Fazil (1995 & 1996) counts it as 3,296,517 volumes of books, 4,505 periodical titles, 32,360 manuscripts and 23,182 items in microform. University libraries maintain this material to meet the study and research requirements of 56,402 students and 8,708 faculty members and research scholars. In 1994 there were fifty books per reader, compared with 112 books per student in the U.K. "Inadequacy of materials in Pakistani university libraries can further be elaborated by the fact that [the] total collection of all the twenty government-funded university libraries is one-third of the collections of a single library of Yale University in [the] USA, which alone contains as many as 9,937,751 volumes" (Fazil 1995). The ratio of professional to non-professional library staff ranges from 25:82 to 2:19. Based upon a financial survey of fourteen libraries (Fazil 1995), an average amount for each university library is hardly 3% of the over-all budget of the university. Moreover, reference, indexing and abstracting services are almost non-existent. Even catalogues are not upto date.

According to a survey of fifteen university libraries conducted by Yaqub (1990) there are thirty-nine volumes per user. One university library has only 9,612 volumes in its collection. The maximum number of transactions in a university during a regular work-day is 403. This comes out to 0.06 transactions per user. Only twelve libraries have open stacks. According to Yaqub (1992) the financial position of university libraries is very poor. Except for Karachi University, the universities allocate less than 5% of their total budget for libraries. Qureshi (1990) points out that several university libraries in Pakistan have their own buildings, but the maintenance of these buildings has been neglected. In some buildings there is no proper arrangement for light and ventilation.

Punjab University, the oldest in the country, has thirty-eight libraries, including one central library which is the best repository of manuscripts in the country. Eighty-five professional librarians and 310 non-professionals manage a total of 913,504 volumes (Siddique 1994). The libraries of Pakistan's 680 colleges hold more than 3,640,000 volumes (Anis 1993).

PUBLIC LIBRARIES

According to Anis (1993), public libraries in Pakistan grew from just twenty-one in 1951 to more than 280 by 1989. The Punjab Public Library, Lahore (founded 1884), holds the country's third largest collection (215,000 volumes), with 1,200 manuscripts in Arabic, Gurmukhi, Persian and Urdu. The Dayal Singh Trust Library, Lahore (founded 1908), holds 122,000 volumes. Others include the Liaquat Memorial Library, Karachi (1950;

120,000 volumes), and the Central Public Library, Bahawalpur (1948; 100,000 volumes). The Quaid-e-Azam Reference and Research Library opened to the public in Lahore's beautiful gardens, Bagh-e-Jinnah, in 1984. Among the oldest libraries in the country are the Karachi Metropolitan City Library (founded in 1851 as the Frere Hall Library; 43,300 volumes) and Sandeman Public Library, Quetta (1856; 16,700 volumes). Khubaib (1996) gives information about 301 public libraries. Sadiq (1993) writes that there are 150 public libraries in Pakistan, but in a strict sense no public library actually exists. The largest cities do possess library facilities, but the 80% of the population living in rural areas are not in a position to have access to these facilities. The public libraries are largely maintained by local government. Taj (1990) reports a survey of eighty-two out of 238 public libraries in the province of Punjab. Only sixteen libraries have professional staff. The Punjab Government allowed all local bodies to spend 1% of their total revenues on the development of libraries, but according to the survey the actual allocation is less than 0.4%.

In the 1990s, two bookmobile units organized by the Punjab Library Foundation have been started at Lahore and Gujranwala Divisions (Jalal 1993). Six American Centre Libraries in the country provide SDI and Article Alert services. For this purpose a profile of interests of active library users is maintained on computer. Table of Contents service is also provided. In this service photocopies of contents pages are sent to the readers by mail, and articles in full text are supplied on request. United States Information Service (USIS) Libraries also donate books to other institutions (Siddiqui 1990). The British Council Libraries in Pakistan, established in 1948, were the first to establish a network of libraries with an effective union catalogue and an inter-library loan system. The libraries provide MEDLINE searching service through a CD-ROM database. In June 1995 the Council Libraries network was connected on electronic mail (Javed 1995).

CHILDREN'S AND SCHOOL LIBRARIES

Libraries in schools, Nasim (1991) says, are in poor condition. Unfortunately whenever library surveys were conducted school libraries were ignored. Many library directories were published but none of them include school libraries. Some research reports were also submitted in the form of library surveys but they excluded school libraries. Hanif (1990) writes that there are about 84,000 primary schools in Pakistan and they are spread through out the country. To be able to establish libraries in every nook and corner of the country, there is no better place than the primary schools. They are available even in small villages. These libraries can create a reading

public which can go into the millions. The enrollment of primary schools is about eight million. If such a huge number is made book-minded it can completely change the out look of the country.

Nasim (1990) reports the findings of a survey of forty-three libraries offering services to children in ten cities of Pakistan. The survey proved that library services for children are not satisfactory. The Punjab Provincial Government has, however, taken some steps in this field. The inauguration of a "Children's Library Complex" in 1988 by the Punjab Chief Minister is a noteworthy event in the history of children's librarianship in Pakistan. "Factors affecting school library development in Pakistan are lack of library awareness, planning, funds, space, professional staff, resources, services, [and] reading habits; and ignorance of modern technology. If we remove these we can build a better network of school library services in Pakistan" (Nasim 1991).

SPECIAL LIBRARIES

Anis (1993) estimates that 330 special libraries in Pakistan hold some 2,500,000 volumes. Two of the oldest libraries are the Punjab Civil Secretariat Library, Lahore (founded in 1885; 60,000 volumes), and the Punjab Textbook Board Library, Lahore (1892; 32,000 volumes). Khubaib (1996) lists 423 special libraries.

> The history of medical libraries in Pakistan goes as [far] back as ... 1860 when the first Medical College was established in this part of the sub-continent. At the time of the establishment of Pakistan there were two colleges, King Edward Medical College at Lahore and the Dow Medical College at Karachi. With the passing of... time the number of Medical Colleges has risen to seventeen. Apart from this, there is Agha Khan Medical University and other specialized medical institutions as well as hospitals which have attached libraries. In the absence of authentic statistics, their exact number and collection ... [are] not known, but it is estimated that the number of Medical Libraries in Pakistan is around fifty. The recent development in medical libraries is the computerization of Agha Khan University Library and the Library of the College of Physicians and Surgeons, Karachi. The College of Physicians and Surgeons Library has been designated as the National Focal Point for MEDLINE and has acquired the CD-ROM disks from 1980 onwards. [Hanif 1991]

Qureshi (1990a) writes that medical librarianship is a new profession in Pakistan. For a long time the librarians working in medical libraries felt the need of a platform where they could gather and discuss issues of mutual interest. As a result, the Pakistan Medical Library Association (PMLA) came into being in 1987. Qureshi concludes his article by saying that the situation of medical college libraries in Pakistan is not very encouraging. Very few

medical colleges have good libraries. Because of the lack of adequate resources, and some other factors, the Pakistan medical college libraries can not be compared with those of the developed countries.

Agriculture plays a vital role in Pakistan's economy. It employs more than half of the population and contributes 24% of the GDP. Javed and Meer (1990) surveyed fifty-one libraries in the field of agriculture. There are mainly two types of agricultural libraries in Pakistan: academic and research. Academic libraries belong to the institutions offering formal degree programmes in the field of agriculture, such as the universities of agriculture at Faisalabad, Tandojam and Peshawar. Research libraries belong to the institutes and centres conducting scientific research in different areas of agriculture, such as the National Agricultural Research Centre (NARC), Islamabad, and Ayub Agricultural Research Centre, Faisalabad.

Bushra (1990) describes the activities of the Lahore Business and Economics Libraries Network (LABELNET), which is aimed at facilitating resource sharing among the libraries in the areas of business and public administration and other related fields. The project started in 1986, and is jointly sponsored by the International Development Research Centre (IDRC), Canada, and the Lahore University of Management Sciences (LUMS). The publications of the project include *The Union List of Serials of Business and Economics Libraries in Lahore* (Lahore : LABELNET, 1990) and *A Union Catalog of Publications on Pakistan's Business and Economy in LABELNET Libraries* (Lahore : LABELNET, 1990). The project has introduced the use of Micro CDS/ISIS software into libraries in Lahore. Nuzhat (1990) describes the activities of the National Documentation Centre Library and Information Network (NADLIN) in the field of water resources. It is funded by USAID. The other NADLIN collaborators include eight institutions working in the field of water management.

LIBRARY AND INFORMATION SCIENCE EDUCATION

LIS education has been the most popular subject in library literature published during 1990s. Discussing the development of library education in the Indian sub-continent, Anis (1992) writes,

> The coming of American librarians in British India eventually resulted in the introduction of library science instruction at university level. In 1915, Asa Don Dickinson (1876-1960) came to Lahore upon his appointment as University Librarian to organize the Punjab University Library and also to teach modern library methods. Dickinson's certificate course of one academic year started in the autumn of 1915 in the University Library. This was a post-graduate day-time course, but undergraduate working librarians including non-matriculates

were also admitted to it. It is interesting to note here that this was the first university-based course in the then British empire, as the London University had not established its Diploma course by that time. The course remained suspended for two years after Dickinson's departure in 1916. Revived in 1918, the course was converted to a post-graduate course in 1928. The study of German or French was made compulsory in 1936.

Sajjad (1993) adds that the course was again suspended during 1945-49 because of the chaotic conditions of the pre- and post- independence era. In 1959, the name of this post-graduate certificate was changed to "diploma." In the meantime, the University of Karachi had introduced its part-time study programme in 1956. After having instituted the first post-graduate diploma programme, the University of Karachi was quick enough to introduce a Master's degree programme in 1962. Afterwards, the other universities started their Diploma and Master's programmes. Fazil (1994) gives these detail of the programmes:

	Certificate	Diploma	M.A.	M.Phil.	Ph.D.
Karachi University	-	1956	1962	1985	1967
Punjab University	1915	1959	1974	-	-
Peshawar University	-	1962	1982	-	-
Sind University	-	1970	1974	1983	-
Balochistan University	-	1978	1985	-	-
Bahawalpur University	-	1983	1984	-	1986

According to Mangla (1994), candidates having a good bachelor's degree are generally able to secure admission to the Diploma course. For admission to the Master's degree course, in addition to possessing the post-graduate Diploma, a candidate is usually required to have experience in a library of good standing. It is estimated that the annual enrollment for the Diploma and Master's degree courses in six library schools is 260 and 140, respectively. On the basis of annual enrollments, the total number of graduates from these library schools through 1992 would be about 4100 and 1650, respectively. Hamid (1992) gives the total number of Diploma and Master's degree holders as 3,304 and 2,349, respectively.

In the beginning, most of the teachers in departments of library science in the universities of the country were part-time, and were drawn from among the top librarians. Out of the thirty-three teachers, twenty-two were part-time during the academic year 1965-66 (Sadiq 1994). According to Sajjad (1994) there are forty-four faculty positions in six library schools, of which thirty-four are filled.

The University Grants Commission revised the LIS curriculum in 1991 and 1995. In designing a new curriculum the following factors were given special consideration: current trends in library education internationally; changing needs of libraries and information services in Pakistan; and financial implications of the revision. The revised curriculum includes such new courses as Library Automation; Information Storage and Retrieval; Networking and Resource Sharing; Communication and A. V. Media Librarianship; Management Information System; and Marketing of Information Services. The Curriculum Revision Committee also made a number of recommendations to facilitate the implemenation of the proposed curricula. These include: organization of training laboratories provided with adequate information technology equipment at all library schools; development and strengthening of the libraries attached to the departments; replacement of the chalk and talk method by other modern teaching technology supported with audio-visual and practical training aids; and strengthening the staff development programmes through organization of short courses and workshops on topics of interest (Haider 1995)

Allama Iqbal Open University started LIS education through distance learning in 1988. The Certificate in Librarianship consists of two courses, Organizing Library Resources and Library Services. To introduce the Bachelor in Library and Information Sciences (BLIS), two more courses were started in 1990. These are History of Libraries with Reference to Pakistan and Classification and Cataloguing. The following are the enrolment figures from the Spring, 1988 to Autumn, 1994 semesters:

Course Code	Course Title	Enrollment
422	Organizing Library Resources	5,182
423	Library Services	4,539
466	History of Libraries with Reference to Pakistan	1,914
467	Classification and Cataloguing	996

The University is planning to introduce a Master's programme in the near future (Basharat 1994 and Niaz 1995)

In the 1970s, the Pakistan Library Association proposed introducing library science as an optional subject at the intermediate level. College librarians actively supported this idea. The Boards of Intermediate and Secondary Education of Karachi and Hyderabad approved the introduction of library science courses at the intermediate level in their respective areas of jurisdiction. The Boards of Sargodha and the Centrally Administered Area

awarded similar approval at the later stage (Anis 1992). During 1990-91 all Boards in Punjab province approved the subject at the intermediate level, and it is being taught at various colleges (Nazir 1992). The subject has been taught at the B.A. level in one college in Karachi since 1982 (Anis 1992). Punjab University approved an LIS curriculum LIS at the Bachelor's level in 1995.

Siddique (1992) reviews the research conducted by the students of six library schools. Four hundred twenty-seven Master's theses were produced until 1989, for an annual output of 18.56. The compilation of bibliographies, union catalogues, or indexes was the most popular work, accounting for 26.7% of the theses. Fifty-five percent of the theses were written in English, and 45% in Urdu.

INFORMATION TECHNOLOGY IN LIBRARIES

Because of to its efficiency, marvelous performance, and ability to handle a large quantity of documents, the computer is becoming popular in librarianship and information services. In Pakistan, library automation was introduced in the 1980s, and a number of libraries were computerized in or after 1987 (Khalid 1995). Bushra (1993) describes the problems faced by Pakistani libraries in automating their procedures. She mentions computer illiteracy, improper planning, unavailability of library software, retrospective conversion, lack of standardization and quality control, bureaucratic set-up and lack of technical expertise. Sadiq (1994) gives a list of twenty-three libraries which are in the process of being computerized, and tells what software they are using. Maqsood (1993) reports on a survey of ninety-five libraries which are using computers in the cities of Islamabad and Rawalpindi. Most of the libraries have IBM-compatible personal computers, and are concentrating on cataloguing and acquisitions. Only 39% of the institutions have staff trained in library automation. Discussing the myths and realities of library automation in Pakistan, Sajjad (1992) tries to remove the confusion about library automation in the minds of librarians. He says that a badly-managed library can not be improved with the help of computer; a computer can only retrieve information about documents, but does not provide access to those documents; library automation is not an objective in itself; merely buying a computer does not mean library automation; provision of the right hardware is only one of the many requisites for an automation project; system development is too costly to be affordable for our libraries; and training of personnel and retrospective conversion are important facets of library automation. Anwar (1992) discusses some critical issues in the use of information technology in Pakistani libraries. According to him, Pakistan

spends only 0.2% of its GNP on R&D activities; foreign information resources and services are expensive; it is impossible for individual libraries to be self-sufficient in supplying information; National Information Centres should be set up; there should be coordination among libraries and information centres; a National Centre for Software Development and Training should be created; and appropriate manpower should be developed for library automation. According to Najaf (1995), most of the university libraries in Pakistan have not yet seriously considered the use of computers in library operations. Only a few university libraries now have computers. With the exception of three agricultural university libraries and two private university libraries, no other university library is using information technology. The major limiting factors for not introducing information technology in the university libraries of Pakistan appear to be lack of initiative and failure to realize the importance of information by the top management of the university; lack of proper finances; lack of trained manpower; and lack of information sensitivity.

Software used mostly for housekeeping routines in Pakistani libraries include dBase, Foxpro, INMAGIC, CDS/ISIS, KITABDAR, and LAMP (Khalid 1995a). LAMP software, developed by the Netherlands Library Development Project (NLDP) with the collaboration of the Pakistan Library Association (PLA), is being used in more than fifty libraries, including six legislative libraries. The software can handle acquisitions, cataloguing and the circulation of books and serials. An Urdu version of LAMP has also been prepared (Khalid 1996).

NLDP has played an important role in promoting information technology in Pakistan. The promotion activities include: setting up five PLA computer training centres; inviting automation experts from abroad; sponsoring librarians to attend advanced courses abroad; supplying hardware to libraries and library schools; establishing information networks; developing software; carrying out retrospective conversion; developing a national database on CD-ROM; establishing the Library Automation Group (LAG); and including information technology components in the revised curriculum of library schools (Khalid 1996a). The PLA Computer Training Centre at Lahore started functioning on 2 November 1992. To run the Centre's affairs a Managing Committee and a Program Committee have been set up. The training programme includes core and advanced courses (Bushra 1993a). Until January 1996, thirteen courses had been conducted at the Centre, with 259 persons attending. Consultancy services to libraries throughout the province have also been provided by the Centre (Khalid

1996b). Karachi Centre trained 126 librarians in library automation. This is 31% of the total number of librarians working in Karachi (Samdani 1995).

The Department of Library and Information Science at Punjab University has a computer laboratory with five personal computers. CD-ROM and e-mail are available. The departmental library has been automated using LAMP software (Khalid 1996c). In August 1989, the Directorate of Scientific Information, National Agricultural Research Centre installed a CD-ROM unit along with the AGRICOLA database. This was the first entry of CD-ROM into Pakistani libraries or information centres. Now more than thirty-two institutions in Pakistan are using CD-ROM technology for searching international databases. Currently more than seventy databases are available on CD-ROM in different libraries. Most of these are in agriculture, biology, and medicine, but databases in other fields (such as education, economics, sociology, water resources, environment, fisheries, extension, library and information sciences, science and technology) are also available. Encyclopedias, dictionaries and computer programmes are also procured by some libraries for their reference sections (Shahnaz 1994). Shahnaz and Bhatti (1993) give a list of CD-ROM databases available in various libraries.

LIBRARY PROFESSION

The Pakistan Library Association was established in 1957 in Karachi with the following aims and objectives:

1) To establish a comprehensive library service through out Pakistan;
2) To promote study and research in library science, and the dissemination of information about current trends, theories, and practices in the field of librarianship;
3) To improve the status and professional standing of library workers, and safeguard their interests; and
4) For such other ends as will further the cause of libraries and librarians of Pakistan.

It is governed by an Executive Council, and there are five branch councils, viz., Punjab; Balochistan; NWFP; Sind; and Federal region including Gilgit, Azad Kashmir and Tribal Areas. The headquarters rotate among the branches (Umera 1993). The *PLA Journal* was first published in 1962. Revived in 1968, it ceased publication after two or three issues. Eventually it was revived again, in August 1987 (Qureshi 1991). The PLA has twenty-one items on its publications list (Aqila 1992). The 15th PLA conference was held in 1994 at Lahore. During the 1990s, the Association arranged various seminars, workshops, and lectures. Library automation and

new information technology were the major topics of all the continuing education activities. The membership of the PLA exceeded 1400 for the first time in 1994.

The most active professional association during the period has been the Punjab University Library Science Alumni Association (PULSAA). Revived in 1988, PULSAA has done a lot for the profession. Its outstanding activities during 1989-90 include the publication of *PULSAA News*; a number of short courses and seminars; a lecture on CD-ROM; and the establishment of a computer laboratory at the Department of Library Science, Punjab University (Mirza 1990). To celebrate seventy-five years of the Department's existence, in 1990, PULSAA launched a Diamond Jubilee programme. A three-day conference on "Library Education in Pakistan: Problems and Prospects" was the focus of all events. A special issue of *PULSAA News* was published in a book form, and entitled "A Treatise on Library and Information Science in Pakistan" (Qarshi 1993). PULSAA's activities during the session 1991-92 session included seminars, and two books were published. A conference was held in January 1993 (Javed 1993).

It would be unjust if I did not mention the role of Netherlands Library Development Project in advancing the library profession in Pakistan. During the period studied, the NLDP worked on 108 different aspects of library development. Its activities in promoting information technology have already been described. Its other remarkable activities include strengthening library schools and professional associations; helping PLA in cooperative activities with organizations like IFLA, IDRC, UNESCO, USAID, the Asia Foundation, and the ALA; sending Pakistani librarians to short courses and orientation tours in the Netherlands; providing continuing education in technical services, library management, and preservation; promoting research in library and information science, and publishing library literature; preparing a directory of libraries; and revising curriculum (NLDP 1995 and Mushahid 1994).

Riazuddin (1991) commented on the overall situation of the profession in Pakistan by saying:

> Librarianship in Pakistan, after facing numerous problems of money, manpower, material, and management, shows an upward trend. To conclude, the expansion of libraries, and the resulting growth of their resources and services, from cities down to villages ... have widened the accessibility to libraries and books throughout the country. How this opportunity is utilized for further progress and betterment of the country will very much depend on our collective efforts to maximize their better use in the country.

CONCLUSION

The literature produced by Pakistani librarians during the 1990s presents an excellent picture of librarianship in the country. Although there is no effective mechanism for maintaining statistics on libraries in Pakistan, the literature cited suggests that the overall growth of libraries in the country is satisfactory. Remarkable achievements include the establishment and inauguration of new National Library at Islamabad; the establishment of various university libraries in the private sector with large collections and many new services; the continuing support of the Punjab Library Foundation for public libraries; the trend towards the use of new information technology; and the revision of the library and information science curriculum to meet the emerging demands of the market. During the period studied, the Netherlands Library Development Project (NLDP) has boosted all professional activities. Its most significant is the establishing of five computer training centres for librarians. Librarians also have started taking a more active part in professional associations. On the other hand, there are many deficiencies still to be overcome. Some efforts have been made to share resources, but this practice is generally ignored. No attention is paid to school libraries. There is a dire need of library education at the post-master's level. Research activities in librarianship should be promoted by library schools and professional associations. Professional periodical literature should be published regularly. The lack of a national library and information policy is also a problem. The government should support and finance activities furthering library development in the country.

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Emerging Trends in Technical Services in Libraries: A Training Experience in Pakistan*

The term 'Technical Services' may be defined as 'All the activities and processes concerned with obtaining, organizing and processing library material for use.' Technical services include the following four processes: Acquisition of library material; Classification; Cataloguing; Physical preparation of the material. In other words, technical services include all the procedures through which a book or other library material has to pass from first entry into library to placement on the shelf for public use. Quickness in these services surely saves the time of the reader (the end-user). Accuracy is also important in these services. For example, errors in classification may scatter similar material in distant places, while errors in cataloguing mean the misplacement of material in the library. Practical training in providing technical services is an integral part of any library science education programme at any level.

In Pakistan, according to a survey, there are more than 6,000 libraries, which have a total collection of 13.35 million volumes.[1] There are six universities that are imparting library education at postgraduate level. These universities have produced 3,304 postgraduate diploma and 2,349 master's degree holders.[2] There are some other library schools and organizations which arrange courses at graduate and undergraduate level for para-professional staff. A significant part of the curricula of library education programmes at all levels include practical training in technical services.

RATIONALE OF CONTINUING EDUCATION IN TECHNICAL SERVICES FOR PAKISTANI LIBRARIANS

Although, according to market demand, there are sufficient training programmes for the production of librarians, the need for continuing education has always been felt in professional quarters. Feather and Smith of Loughborough University, having a long experience of training Pakistani librarians, describe their views about the continuing education as:

> The need for continuing education for professional librarians is widely recognized throughout the world. The great changes, not all of them technology driven, which have taken place in the last 20 years, have turned what might once have been regarded as a luxury into a necessity. Although the need for

* Source: "Emerging Trends in Technical Services in Libraries: a Training Experience in Pakistan." *Information Development*, vol. 13, no. 2 (June 1997): 83-88.

> continuing education was first perceived in the industrialized countries – particularly in the United States – it is equally necessary in the developing countries, especially perhaps in those with a substantial library infrastructure and a realistic hope of applying microcomputer-based technology in the near future. It is economically impossible to retrain all of a country's professionals outside the country. For a mass programme of re-education, in-country training is the only practicable solution.[3]

Further information on the Pakistani situation was provided by the findings of a survey conducted by Shahzad Ahmad Siddiqui.[4] He asked public librarians in the Punjab about the factors which encouraged them to seek continuing education. These were ranked is as follows:

1.	Personal interest	64.1%
2.	Serving users more efficiently	61.5%
3.	Keeping up with technological developments	51.3%
4.	Encouragement of employer	46.2%
5.	Wish to become specialist	46.2%
6.	Promotion prospects	41.0%
7.	Financial reward	35.9%
8.	Low cost of course	35.9%
9.	Moving to new jobs	28.2%
10.	Time-off provided by employer	20.5%

The major reasons why continuing education for librarians, particularly in the field of technical operations, is needed in Pakistan are examined below.

Retraining of Working Professionals

The first and the foremost demand for continuing education arises in the mind of the librarian. Every individual wants professional development for his or her inner satisfaction and a better career. They need to maintain and extend their professional skills. In Pakistan, library schools have been training professionals since 1915. At the moment, courses on 'technical services' are being taught at diploma and master's levels. Some schools have started M.Phil. and Ph.D. programmes, but these are purely research-based. At library schools there is no opportunity for continuing professional education. Professionals whose degrees are several years old can not bring their knowledge up-to-date on their own, and need retraining. In particular, due to the paucity of resources, a large number of librarians do not do practical cataloguing and classification, with the result that, when they want to start again, they have forgotten everything. There is another fact to be

considered. Although the job market of librarians is good as compared to other professions in the country, a large number of qualified young people are still facing unemployment and have to wait, sometimes for a number of years, to get a job. During this time, they want to keep their knowledge fresh. Finding a better job is another reason why working professionals need continuing education.

Changes in Technical Tools

It is a bitter fact that the syllabuses of Pakistani library schools are 10 to 15 years old. In the meantime, new editions of technical tools have been published and are being used in a considerable number of Pakistani libraries. Most of the library schools, for example, use the 19th edition of the Dewey Decimal Classification (DDC) for teaching, whereas the 20th edition has been in use since 1989. The Anglo-American Cataloguing Rules (AACR2) were last revised in 1988, yet library schools have not been able to update their syllabi in accordance with the changes. Sear's List of Subject Headings has been issued in various new editions during the last decade. All these new tools are difficult to use for working professionals and a need for their training arises.

Use of Specialized Tools

Pakistani library schools only provide training in some of the standard technical tools like DDC, Sears, etc. In some libraries, other tools are in use and the staff find difficulty in using them. For example, according to a survey, 30% of Pakistani university libraries use the Library of Congress List of Subject Headings (LCSH)[5] while there is yet no opportunity for librarians to receive training in this tool. Similarly, some special libraries use the Universal Decimal Classification (UDC) and the Library of Congress Classification. In the absence of regular training facilities in using these specialized technical tools, the only solution is continuing education.

New Technology and Technical Standards

The computer has revolutionized the scene of librarianship throughout the world. Although its progress in Pakistan is slower than in other developing countries, their is still a significant trend towards automation in libraries. Computerized searching helps staff and users at the same time. Card catalogues are being rapidly replaced by online catalogues. Technical tools like DDC and LCSH are available now on CD-ROM. Similarly, for the use of computer, new technical standards have been developed, for example

in the form of MARC formats. To face the challenge of handling new information technology, our library schools have no resources, neither man nor machine. The only way to solve this problem is through continuing education. The establishment of Pakistan Library Association Computer Training Centres in five cities of Pakistan is a major breakthrough in this field. These centres fulfil the hardware requirements to some extent.

PRE-REQUISITES FOR CONTINUING EDUCATION PROGRAMMES

In all professional quarters, there is unanimous opinion that there should be effective continuing education programmes in Pakistan; but there are many hindrances in the way. Lack of resources has always been a problem in the field of librarianship. In designing continuing education programmes, particularly in technical services, one has to answer some difficult questions, as outlined below.

Who Will Finance?

Lack of financial resources is the major problem in conducting continuing education courses. In some countries this is done at government level. The governments set the policies and priorities and finance all continuing education activities. Unfortunately, in Pakistan, there is no federal plan to provide in-service training for librarians. In most cases, if courses are arranged by other organizations, trainees pay for themselves. But in a society with a low Gross National Product (GNP), it is very difficult for the individual to bear all the expenses of training. Sometimes booksellers assist professional associations in this respect by partially sponsoring training courses. In 1995, the Netherlands Library Development Project for Pakistan (NLDP)[6] decided to design and finance a continuing education programme. The aim of this programme was to train Pakistani librarians in new trends in technical services. NLDP was ready to bear all expenses of the courses including course materials, traveling and lodging of resource persons, and refreshments for the trainees.

Who Will Teach?

The non-availability of qualified and skilled instructors is another major problem in conducting such courses. A few Pakistani librarians have had training in advanced countries, but most of them did not return to Pakistan. The preparation of master trainers locally is a key need of the present time. To start with, NLDP decided to invite an expert from an advanced country.

Asian Partners in Training (APT) and the State Library of New South Wales, Australia agreed to sponsor an expert to come to Pakistan and conduct a training course. Ms. Cheryl Grant, of the Materials Processing Department of the State Library, conducted the first course. During this course it was decided to conduct the next courses by local trainers. Three local professionals volunteered for this task: Muhammad Ilyas, (LIS Lecturer, Balochistan University, Quetta); Syed Liaqat Ali, (LIS Lecturer, University of Peshawar); and the author.

Who Will Manage?

Who will bell the cat? Who will take the initiative and responsibility to organize the activity? These are important questions. Fay Nicholson[7] identifies six providers of continuing education. These are: organizations; library training; professional associations; library schools; vendors; and consultants.

According to Shahzad Ahmad Siddiqui,[8] Pakistani librarians consider library schools as the most important providers of continuing education. For recent training programmes the Pakistan Library Association (PLA) offered to cooperate. In some courses, individual libraries and library schools were also involved. Personal level help was also available for some courses.

What Will be Taught?

Deciding on the subject coverage for continuing education is another problem. The range of subjects which should, in principle, be covered is almost infinite. However, keeping in mind the current training needs of Pakistani librarians, it was decided to cover some aspects of technical services. During the last few years, NLDP and PLA cooperated in a retrospective catalogue conversion project for six legislative assembly libraries. In the course of the project, the inability of librarians to handle new and specialized technical tools became clear. NLDP, with the help of Ms. Grant, finalized the following subjects to be taught in the first and subsequent courses:

- Practical Cataloguing using AACR2 (1988 revision)
- Classification using DDC (20th edition)
- Subject cataloguing using LCSH
- Thesaurus construction
- USMARC
- The Library Automation and Management Program (LAMP)

How Will Tools be Provided?

The provision of the needed tools is the final step. Unfortunately, Pakistani institutions have no funds to procure modern technical tools, particularly to provide trajning in a computerized environment. In this respect, NLDP did a lot. It established five PLA Computer Training Centres in Pakistan with 11 PCs at each one, and donated copies of DDC20, Sears List of Subject Headings, LCSH, AACR2, the AACR2 Handbook, and many other books on computers to each of the six library schools. Computers, printers, CD-ROM drives, and photocopiers were also donated to the PLA offices and library schools. Electronic mail services at library schools and PLA offices were installed by the NLDP. LAMP software was given free of cost to all library schools.[9] For the first course, some other tools were also specially purchased.

RECENT TRAINING COURSES ON TECHNICAL SERVICES

Advanced Classification, Cataloguing and Subject Indexing in a Computerized Environment (Rawalpindi/Islamabad)

This two-week training course was held from 18 to 30 March 1995 at the Poultry Research Institute, Rawalpindi. The resource person from abroad was sponsored by Asian Partners in Training (APT) and the State Library of New South Wales, Australia. In the arrangements for the course, Pakistan Library Association (Federal Branch) assisted NLDP. Forty-three professionals attended the course from twelve different cities in Pakistan. Thirty-eight were working librarians, while the other five were teachers at library schools in the universities. One teacher from each library school, and some of the other librarians, were financially sponsored by NLDP. The course contents included: cataloguing using AACR2 (1988 revision); classification using DDC 20th edition; subject cataloguing, using LCSH; thesaurus construction; and USMARC. In the evening, practical training in the LAMP software was arranged at the PLA Computer Training Centre, Islamabad. The author was engaged as instructor for this training. Modern techniques of teaching (i.e., discussion, assignments, class participation, exercises, library visits, and use of computer, overhead projector, data show, etc.) were applied in the course. Multiple copies of technical tools like DDC, LCSH, etc. were made available in the class room. All course material in the form of original books and photostat copies was supplied to the participants free of cost by NLDP. At the end the course was evaluated by the participants. The Federal Secretary for the Ministry of Science and Technology was the Chief Guest at the certificate distribution ceremony.[10]

Automated Technical Services in Libraries (Bahawalpur)

Three teachers who had been selected as local resource persons during the first course jointly arranged this course. This time the course was specially designed in Bahawalpur, a distant city where, although a library school exited, the area was normally ignored by sponsoring agencies. The two-week course was held at the Department of Computer Science, Islamia University, Bahawalpur from 27 May to 8 June, 1995. In the arrangements, the Central Library of the University and the Department of Library and Information Science helped NLDP.

Librarians from Bahawalpur, Multan and Dera Ghazi Khan divisions were invited to participate in the course. A strong demand for continuing education was shown by professionals in this area. The course was initially designed for twenty-five persons, but the response exceeded expectations, and short listing the potential students was a major problem for the organizers. Every effort was made to accommodate the maximum possible number of participants, and the course was attended by sixty-eight participants, of which thirty-seven were library and information science students at the University and four were teachers of computer science. Fortunately, a good computer laboratory in the Computer Science Department, with twenty PCs, was available for practical work.

Subjects covered during the course included: AACR2'; DDC20; LCSH; USMARC; thesaurus construction; fundamentals of computers; disk operating systems; and LAMP. A question-answer session was also organized. The course was inaugurated by the Dean of Science of the University and at the end the Vice Chancellor distributed the certificates. The course was also evaluated by the participants. According to the evaluation the course was overall rated as a successful.[11]

Advanced Technical Services in Libraries (Lahore)

In accordance with a decision taken during the first course, a similar two-week course was conducted in Lahore from 1 to 13 July, 1995. The Quaid-e-Azam Library, Lahore, was the co-sponsor for this course. The main resource person was the author, while six librarians from Quaid-e-Azam Library were also engaged to deliver special lectures. The course was attended by thirty-five participants from all over Punjab province. Twenty-seven of the trainees were professional librarians and eight were library and information science students from Punjab University. A further break down of the working librarians was as follows: Five general college librarians; one technical college librarian; Four commercial college librarians; one medical college librarian; Two university librarians; Ten public librarians; and four

special librarians. The subjects covered, ranked in order of importance and preference as assessed by the participants, were:

- Number building in DDC20 (Tables & Schedules)
- Cataloguing (Description)
- Cataloguing (Access points)
- LCSH
- Classification of literature
- Introduction to classification
- Cataloguing of Pakistani names
- Cataloguing of non-book materials
- USMARC
- ALA filing rules
- Computer demonstration of LAMP
- Cataloguing of serials
- Cataloguing of Urdu books[12]

Some subjects were included for the first time according to the local needs of libraries. For the provision of technical tools and computer equipment, the Department of Library and Information Science, Punjab University, the American Centre Library, the Children's Library Complex, and the PLA Computer Training Centre, Lahore helped a lot. The course was inaugurated by Sher Afgan Malik, the Chief Librarian, Quaid-e-Azam Library (ex-Secretary General, Pakistan Library Association) and the certificates were distributed by Prof. M.A.K. Sunbal, Director General of Public Libraries, Punjab.

Advanced Technical Services in Libraries (Peshawar)

Under the auspices of Department of Library and Information Science, University of Peshawar, a two-week course was organized and coordinated by Syed Liaqat Ali. The course was held from 27 July to 10 August, 1995 at the Department. Some other persons were also engaged as instructors. These included: S. Viqar Bokhari (Chairman, Department of Electronics, University of Peshawar), S. M. Abbas (Assistant Professor, Department of Business Administration, University of Peshawar), Arshad Amin (Instructor, MICS, Peshawar), and Mr. Usman (Internet Specialist). Keeping in view the local needs, some new concepts were included in the course contents, i.e., electronic mail, communication, information management, etc. The course was attended by ten working librarians, twenty-nine library and information science students from the University of Peshawar and one library and information science teacher (forty in total). The computing facilities of the

PLA Computer Training Centre, Peshawar, were utilized for practical training. The course was inaugurated and concluded by Mr. A. A. Salim (Chairman, Department of Library and Information Science, University of Peshawar).[13]

Advanced Cataloguing and Classification (Lahore)

The fifth course in this series was conducted as a workshop with the co-sponsorship of the Pakistan Library Association (Punjab Branch) and the United States Information Service, Lahore. The venue was the American Centre Library, Lahore. The two-week course was held from 18 to 29 August, 1996. The major subject areas were practical classification and cataloguing. Muhammad Asghar (Deputy Library Director, American Centre Library and President, PLA Punjab Branch) and Shaukat Hussain (Deputy Director Public Libraries, Punjab) were the main resource persons. A special lecture by Dr. Abdus Sattar Chaudhary (working in the University of Petroleum and Minerals, Saudi Arabia) was arranged on the topic 'The Future of Cataloguing.' Special lectures on LAMP, electronic mail and Electronic DDC were also delivered. The course was attended by twenty-three working professionals, one library and information science teacher from Bahawalpur and two library and information science students from Punjab University (twenty-six in total). Course was inaugurated by Muhammad Khalil Bhatti (Director General Public Libraries, Punjab) and the Chief Guest in the certificate distribution ceremony was Atta Muhammad Maneka (then Minister for Education, Punjab).[14]

DISCUSSION

The continuing education programme in technical services in libraries has been much appreciated by the participants and other professionals. The training courses have had many beneficial impacts on the profession of librarianship in Pakistan.

To conduct the first course and prepare master trainers a foreign expert was invited. This had a good effect on the profession because Pakistani professionals were able to discuss their practical problems with an expert who belonged to an advanced country. This lessened the gap between information-rich and information-poor professionals. Other professional issues were also discussed with the foreign expert. For example, Cheryl Grant participated in a meeting for the design of the LAMP software version 2. She recommended some useful things for new version.

The programme has set an example to the library schools, professional institutions and other organizations. They can arrange such courses afterwards in the light of the pattern set by this programme. A number of professionals, in various cities, had experience of conducting such courses which may be useful later. A positive impact of this training was seen when the Directorate of Staff Development (Education Department, Punjab Government) started in-service training for college librarians of the Punjab. The first in this series of annual courses was conducted in January 1996 in Lahore.

Through these course, some new aspects of modern librarianship have been introduced for the first time in Pakistan. For example, training in LCSH, thesaurus construction, USMARC, and electronic DDC was entirely new to the country. For details of the subject contents covered in the courses see Table 1.

Table 1. Subjects Covered in the Courses

	Course Number				
Subject Contents	1	2	3	4	5
AACR2 (1988 Revision)	✓	✓	✓	✓	✓
ALA Filing Rules			✓		
Cataloguing of Oriental Material			✓		
Communication				✓	
DDC20	✓	✓	✓		✓
DOS		✓		✓	
Electronic DDC					✓
Electronic Mail				✓	✓
Fundamentals of Computer		✓		✓	
Information Management				✓	
LAMP	✓	✓	✓	✓	✓
LCSH	✓	✓	✓		
Thesaurus Construction	✓	✓			
USMARC	✓	✓	✓		

A large number of professionals benefited from the training. In the five courses, 212 professionals received training. This activity will definitely have good effects on their functioning in libraries and as a result the service quality of our libraries will increase.

Through these courses, local trainers in new subjects have been prepared and gained experience which will help them to disseminate their newly gained knowledge to others. In this way the problems have been solved and now they can train others more confidently. Nineteen different trainers participated in the five courses, of which three basic trainers belong to three library schools. This is again a good symbol. It will help in starting the teaching of new tools on a long-run basis in the library schools. For course-wise number of trainees and trainers see Table 2.

Table 2. Number of Trainees and Trainers

	Course Number				
Trainees Trainers	1	2	3	4	5
Working Librarians	38	27	27	10	23
LIS Computer Science Teachers	5	4		1	1
LIS Students		37	8	29	2
Trainers	2	3	7	5	5

This programme provided professionals from different parts of the country with an opportunity to meet together and discuss their local problems. In addition to practical problems in technical services, the participants also discussed other professional issues. Many new contacts were established, and the meetings were really beneficial for the betterment of the profession.

In the inauguration and certificate distribution ceremonies for the courses, higher officials were invited. This provided a good opportunity to discuss professional problems with them. These officials (like Ministers for Education, Secretaries to Governments, Director General Public Libraries, Vice Chancellors of the Universities, etc.) are always helpful for libraries and they can influence the authorities for the betterment of librarianship.

There were also some problems faced during the training programme. Some of the main problems were:

- The training facilities were insufficient to meet the demand from Pakistani professionals. The numbers of places on the courses was

limited and a large number of professionals were thus deprived of training.

- The courses were conducted in Punjab and the North West Frontier Province (N.W.F.P.) and in the Federal Capital, while Sind and Balochistan were ignored, due to unknown reasons.
- To cover such wide subject content, the duration of the courses, i.e., two weeks, was found insufficient.
- Computing facilities were always found to be insufficient. With such a limited number of computers, the practical training could not be done properly.
- Boarding for trainees was always felt to be a great problem. There were no arrangements to provide residence for participants who came from distant places.

RECOMMENDATIONS

The overall organization and results of this training programme were satisfactory. However, for the betterment of other such courses in future, some recommendations may be made:

- The duration of the courses should be increased.
- Technical tools particularly computers should be provided in large numbers.
- Boarding should be provided to the participants.
- Similar courses should be arranged in distant cities (at least at divisional level).
- Continuing education programmes of the same pattern should be conducted by library schools and professional associations.
- After the expiry of the NLDP, other international and local donor agencies should be contacted for getting sponsorship for such courses. In this regard the government of Pakistan should also be approached. The Punjab Library Foundation may also arrange such courses.
- The government should arrange foreign training to develop master trainers for teaching new developments to the profession.
- The curriculum of library schools should be revised frequently to cater for the changing needs of libraries.
- New trends should also be introduced to the professionals by lectures, seminars, conferences, etc.

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Cataloguing Practice in University Libraries: A Comparison of Three Developing Countries (Pakistan, Malaysia, Saudi Arabia)*

A library catalogue, usually defined as a list of holdings of a library or a particular collection, is an indispensable tool in the bibliographic organization of a library. Without an up-to-date and efficient catalogue, the use of library collections would be greatly hampered. In his evidence before the Re-organization Committee of the British Museum in 1841 T.H. Carlyle rightly observed: "A big collection of books without a good catalogue is a Polyphemus with no eye in the head". The obvious function of a catalogue is to reveal the collections of a library under various access points such as author, title, and subject headings.

In a university, the library works as the backbone of a total educational system. It provides information resources in the form of books, serials, microfilms, etc. to the educators and researchers involved in higher learning. In this modern world, universities maintain large collections of library materials. In this situation, the importance of an effective catalogue increases by a high degree.

UNIVERSITY LIBRARIES IN DEVELOPING COUNTRIES

Pakistan

Pakistani university libraries are among the most advanced libraries in the country. The ten universities existing in 1981 grew to 23 in 1989; their more than 140 libraries held almost 2,900,000 volumes, more than a fifth of all books in Pakistani libraries. They grew at more than 60,000 volumes a year in the 1980s, keeping pace with the growth of the student population. The government's University Grants Commission funds libraries at all public universities. Notable central university collections are at the University of the Punjab Library (opened 1906; 769,000 volumes); the Mahmud Hussain Library, Karachi University (founded 1952; 255,000 volumes); Peshawar University (1951; 200,000 volumes); Quaid-e-Azam University, Islamabad (1965; 150,000 volumes); and Sind University (opened 1949; 137,800 volumes). The Lahore University of Management Sciences (8,000 volumes)

* Source: Khalid, Hafiz Muhammad and Khalid Mahmood. "Cataloguing Practice in University Libraries: a Comparison of Three Developing Countries (Malaysia, Pakistan, Saudi Arabia)." *Asian Libraries*, vol. 6, no. 3/4 (1997): 155-165.

and Shah Abdul Latif University, Khairpur (19,200 volumes) opened in 1985; the Hamdard University (80,000 volumes) opened at Madinat al-Hikmat in 1989[1]. According to a survey conducted by Khan in 1994 there are 3,296,517 volumes of books, 4,505 periodicals, 32,360 manuscripts and 23,182 items in microform in 20 government funded university libraries including their departmental libraries in Pakistan. These resources are available to cater to the needs of 56,402 students and 8,708 faculty members and research scholars [2].

Malaysia

In Malaysia, there are only seven universities, but these few universities, Nazir says, "are making an invaluable contribution by producing skilled and professionally trained manpower and by promoting research and creating understanding among diverse races, sects and religious groups"[3]. The University of Malaya which was first established in Singapore, set up its Kuala Lumpur Division in 1957 – the year of Malaysia's independence. In 1962 the Kuala Lumpur Division was constituted as the University of Malaya [4]. Other universities include University Sains Malaysia (established 1969), University Kebangsaan Malaysia (1970), University Pertanian Malaysia (1971), and University Teknoloji Malaysia (1972). Two newer universities are the University Utara Malaysia (1984) and the International Islamic University (1983), which is co-sponsored by a number of countries. University library collections vary considerably in size and ranged in the late 1980s from 932,000 volumes in the University Sains Malaysia and 500,000 in the University Kebangsaan Malaysia, to 233,000 in the University Pertanian Malaysia and 212,000 in the university Teknoloji Malaysia. The collections in the two newer universities are still relatively small [5]. In general terms all the libraries attached to the universities are relatively well endowed financially, in that annual allocations reflect a favorable percentage of the total university budget. For example, in the University of Malaya Library, this percentage has stabilized at approximately 5.8 per cent [4, p. 61]. Co-operation among university libraries and the National library is well established. Most remarkable projects are the MALMARC (Malaysian MARC) System and a Computerized Union List of Serials Project. Most of the university libraries are active participants in these projects [6].

Saudi Arabia

The development of universities in Saudi Arabia began in the 1950s. The first was Riyadh University, organized in 1957 in the capital city of Riyadh. Following this creation of a fully-fledged university, King Abdul

Aziz University was set up, first as a private university in the western region of Saudi Arabia, in 1965. It became a government university in 1971 when it had fulfilled the major requirements of any modern university. In 1961 the Islamic University was established in Medina, with an emphasis on theological education. The University of Petroleum and Minerals was established in 1964 in the eastern region of Saudi Arabia – where all oil resources are located – with the emphasis on engineering, science, and applied geology. In 1974 a new Islamic University was rounded in Riyadh: Imam Mohammad ibn Saud University, which is concerned with religion, humanities and social sciences. King Faisal University was founded in Dammam in 1975 and it was initiated by the faculties of Islamic architecture, agriculture, and medical sciences [7]. The seventh in this chain of new institutions is Umm al-Qura University in Mecca (1981) which specializes in Islamic studies, the Arabic language, humanities, and social sciences [8]. The library systems of all seven Saudi universities are centralized. Each university has a central library and a number of smaller library units at several locations on the campus. The central library is responsible for almost all the activities of the system, controlling the acquisition and processing and the distribution of the staff [7, p. 315]. The operating budgets in these university libraries is relatively high. There is no correlation between the date of establishment and the size of the collection or the allocated book budget. In spite of large collections and equally adequate book budgets, university libraries in Saudi Arabia suffer from a shortage of qualified professional staff. In addition to Saudis, the libraries also recruited staff from Egypt, Pakistan, and India [9].

PURPOSE AND SCOPE OF THE STUDY

Keeping in view the importance of cataloguing in university libraries, particularly in developing countries where these libraries can play a more significant role in national development, a study was designed. The purpose of this study was to ask the following questions regarding the university libraries in some developing countries:

- What is the current status of cataloguing practice?
- What is the use of various standard/international schemes in cataloguing, classification and subject headings?
- How much similarity/uniformity is there in the use of technical tools among different countries?
- What are the various forms of catalogues?
- Which access points have been provided for searching?

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- Is catalogue work done manually or is a computer being used and to what extent?

Data collection from all developing countries has always been difficult. For the purpose of this study three developing countries were selected (Pakistan, Malaysia and Saudi Arabia). There are many differences and similarities in the three selected countries.

The three countries are geographically far away from each other. People, culture, language, literacy rate, economic situation, type of government, educational system, etc. are entirely different. As similarities, the following points may be considered: all three countries have a majority Muslim population, the Arabic language is thus spoken largely in the three countries, and libraries also have a considerable amount of literature in Arabic. Educational systems at university level in the three countries have largely developed after the Second World War. These three countries also belong to one continent, Asia.

For the purpose of this study all types of universities (general and special/technical) of Pakistan, Malaysia and Saudi Arabia have been covered. The central libraries of the universities have been included in the study. Departmental libraries working independently (not under central libraries) were ignored.

METHODOLOGY

To get information about the cataloguing practices of university libraries a questionnaire was designed. To gain information by survey methods is a tedious job in general and particularly in the case of developing countries where the response rate is very low. The questionnaire was sent to some libraries two or three times. Some friends of the authors in the three countries helped a lot in securing data. The authors also personally interviewed some of the university librarians in Pakistan and Saudi Arabia. The response rate varies in the three countries. From Pakistan, 19 out of 23 (83 per cent) libraries responded. From Malaysia, 6 out of 7 (86 per cent) gave responses while from Saudi Arabia all seven universities responded and the response rate is 100 per cent. The overall response rate is 86 per cent. The coverage of university libraries from the three countries is given in Figure 1.

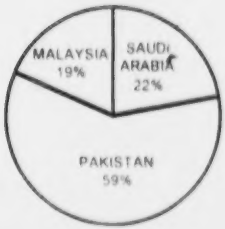

Figure 1. *Coverage of libraries in the survey*

ANALYSIS AND DISCUSSION OF THE SURVEY FINDINGS

Cataloguing codes

PAK: Out of 19 libraries, 16 (84 per cent) use a single code while 3 (16 per cent) use combined codes. All 16 using a single code have adopted the Anglo American Cataloguing Rules (AACR). The other 3 using combined codes have adopted AACR as one of them. All libraries use AACR either alone or in combination (4 still use AACR1). Two libraries use the International Standard Bibliographic Description (ISBD) only in combination.

MAL: Out of 6 libraries, 3 (50 per cent) use a single code while the other 3 (50 per cent) use combined codes. All 3 using a single code, have adopted AACR2 while the other 3 using combined codes, have adopted AACR2 as one of them. All libraries use AACR2 either alone or in combination. ISBD (2), local (1) and another (1) are used only in combination.

SAU: Out of 7 libraries, 5 (71 per cent) use a single code and 2 (29 per cent) use combined codes. All 5 using a single code, have adopted AACR2. Both the 2 using combined codes, have adopted AACR2 as one of them. All libraries use AACR either alone or in combination (1 uses AACR1). ISBD (1) and local (1) are used only in combination.

The results from these data identify that despite the need of other codes, AACR is the most widely-used code in respondent libraries. That shows the overall uniformity in cataloguing practice in these libraries (see Table I).

Table I

Use of cataloguing codes

Codes used	PAK (%)	MAL (%)	SAU (%)
AACR	90	60	78
ISBD	10	20	11
Local codes	0	10	11
Others	0	10	0

Subject classification

PAK. Of the 19 libraries, 17 (89 per cent) use a single classification scheme and 2 (11 per cent) use combined schemes. Of the 17 using a single scheme, 16 use Dewey Decimal Classification while 1 uses another. The 2 using combined schemes have adopted DDC as one of them.

MAL. Of the 6 libraries, 4 (67 per cent) use a single scheme and 2 (33 per cent) use combined schemes. Of the 4 using a single scheme, all have adopted the Library of Congress Classification (LC). The 2 using combined schemes have adopted LC as one of them.

SAU. Of the 7 libraries, 4 (57 per cent) use a single scheme and 3 (43 per cent use combined schemes. Of the 4 using a single scheme, 2 use DDC and 2 use LC. All 3 using combined schemes, have adopted DDC as one of them.

Table II

Use of classification schemes

Schemes used	PAK (%)	MAL (%)	SAU (%)
DDC	86	0	50
LC	0	75	20
Others	14	25	30

Despite a small but significant need for different classification schemes, the analysis shows the overall uniformity in schemes used in respondent libraries. DDC is more commonly used in libraries of Pakistan and Saudi Arabia, while in Malaysia LC is most frequently used (see Table II).

Classification editions

PAK. Out of 19 libraries, 16 (84 per cent) provided information about the editions of classification schemes used in their libraries. All use DDC. Nine of them use the current 20th edition. Four use the 19th edition and 3 use mixed editions of DDC.

MAL. No respondent provided information about classification editions used.

SAU. Out of 7 libraries, 3 (43 per cent) provided information about the editions of classification schemes used. All use DDC. One uses the current 20th edition, 1 uses the 19th edition and 1 uses the 18th edition of DDC.

These data indicate the importance of a common classification scheme with the emphasis on the most current edition (see Table III).

Table III

Use of classification editions

Used DDC editions	PAK (%)	MAL (%)	SAU (%)
20th	56	-	33
19th	25	-	33
18th	0	-	33
Mixed editions	19	-	0

Subject headings

PAK. Out of 19 libraries, 18 (95 per cent) use a single scheme and 1 (5 per cent) uses combined schemes. Of the 18 using a single scheme, 9 use Sears List of Subject Headings, 6 use Library of Congress List of Subject Headings (LCSH) and 3 use other schemes. The library using combined schemes has adopted Sears List and another.

MAL. Out of 6 libraries, 5 (83 per cent) use a single scheme and 1 (17 per cent) uses combined schemes. All 5 using single schemes have adopted LCSH. The library using combined schemes has adopted LCSH and another.

SAU. Out of 7 libraries, 5 (71 per cent) use a single scheme and 2 (29 per cent) use combined schemes. Of the 5 using single scheme, 3 use another and 2 use LCSH. The 2 using combined schemes, have adopted the other as one of them.

The analysis shows diversity in the use of subject heading lists. On one hand Sears is popular in Pakistan, while on the other, LCSH is popular in Malaysia. In Saudi Arabia other schemes are also used in university libraries.

The reason for this diversity is the difference in size and subject nature of the university libraries (see Table IV).

Table IV

Use of subject heading schemes

Used codes	PAK (%)	MAL (%)	SAU (%)
LCSH	30	86	45
Sears List	50	14	0
Others	20	0	55

Manual vs. automated cataloguing

PAK. Out of 19 libraries, 3 (16 per cent) use automated systems, 11 (58 per cent) use manual and 5 (26 per cent) use mixed systems for cataloguing services.

MAL. All 6 (100 per cent) university libraries use automated systems for cataloguing.

SAU. Out of 7 libraries, 3 (43 per cent) use automated systems, 2 (28 per cent) use manual and 2 (29 per cent) use mixed systems for catalogue production.

Table V

Manual vs. automated cataloguing activities

System type	PAK (%)	MAL (%)	SAU (%)
Manual	58	0	28
Automated	16	100	43
Mixed	26	0	29

The analysis shows the increasing use of automated systems compared to traditional manual systems for cataloguing services. University libraries in Malaysia use 100 per cent online catalogues. In Saudi Arabia the libraries use computers in large numbers while most of the Pakistani libraries still use manual cataloguing systems (see Table V).

Catalogue access points

PAK. All (19) provide catalogue access by author through automated (2), mixed (4) and manual (13) systems. Sixteen (84 per cent) provide catalogue

access by corporate body through automated (2), mixed (3) and manual (11) systems. All (19) provide catalogue access by title through automated (2), mixed (4) and manual (13) systems. Nine (47 per cent) provide catalogue access by keywords through automated (5), mixed (1) and manual (3) systems. Eleven (58 per cent), provide catalogue access by journal title through automated (2), mixed (2) and manual (7) systems. Twelve (63 per cent) provide catalogue access by class number through automated (4) mixed (1) and manual (7) systems. Eight (42 per cent) provide catalogue access by author/title through automated (2) and manual (6) systems. Twelve (63 per cent) provide catalogue access by series through automated (2), mixed (1) and manual (9) systems. Ten (53 per cent) provide catalogue access by conference headings through automated (2), mixed (2) and manual (6) systems. Seventeen (89 per cent) provide catalogue access by subject headings through automated (3), mixed (3) and manual (11) systems. Six (32 per cent) provide catalogue access by control number through automated (4) and manual (2) systems.

MAL. All (6) provide catalogue access by author through automated (5) and mixed (1) systems. All provide catalogue access by corporate body through automated (4) and mixed (2) systems. All provide catalogue access by title through automated (5) and mixed (1) systems. All provide catalogue access by keywords through automated systems. All provide catalogue access by journal title through automated (3) and mixed (3) systems. All provide catalogue access by class number through automated (5) and mixed (1) systems. 5 (83 per cent) provide catalogue access by author / title through automated (5) systems. All provide catalogue access by series through automated (5) and mixed (1) systems. All provide catalogue access by conference headings through automated (5) and mixed (1) systems. All provide catalogue access by subject headings through automated systems. All provide catalogue access by control number through automated systems.

SAU. All (7) provide catalogue access by author through automated (1), mixed (2) and manual (4) systems. Five (71 per cent) provide catalogue access by corporate body through automated (1), mixed (2) and manual (2) systems. All provide catalogue access by title through automated (1), mixed (2) and manual (4) systems. Three (43 per cent) provide catalogue access by keywords through automated (1) mixed (1) and manual (1) systems. Five (71 per cent) provide catalogue access by journal title through automated (1), mixed (1) and manual (3) systems. Six (86 per cent) provide catalogue access by class number through automated (1), mixed (2) and manual (3) systems. Four (5.7 per cent) provide catalogue access by author/title through automated (2) mixed (1) and manual (1) systems. Five (71 per cent) provide

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catalogue access by series through automated (1) mixed (2) and manual (2) systems. Five (71 per cent) provide catalogue access by conference headings through automated (1), mixed (2) and manual (2) systems. All provide catalogue access by subject headings through automated (1), mixed (2) and manual (4) systems. Four (57 per cent) provide catalogue access by control number through automated (3) and manual (1) systems.

The analysis shows that most of the libraries in Malaysia offer the majority of catalogue access points. Although the access points of keywords, author/title and control number are comparatively few in Saudi Arabia and Pakistan, the overall use of these access points is significant. That shows the importance of all these catalogue access points for the use of library material and the provision of bibliographic services (see Table VI).

Table VI

Provision of catalogue access points

Access points	PAK (%)	MAL (%)	SAU (%)
Author	100	100	100
Corporate body	84	100	71
Title	100	100	100
Keywords	47	100	43
Journal title	58	100	71
Class number	63	100	86
Author/title	42	83	57
Series	63	100	71
Conference headings	53	100	71
Subject headings	59	100	100
Control number	32	100	57

These access points are provided through automated, mixed and manual systems. Most of the libraries in Malaysia provide them through automated systems. Very few libraries use their mixed or manual systems for this service. Although the use of manual systems for the provision of these access points in libraries of Pakistan and Saudi Arabia is high, still a significant number of libraries use mixed and automated systems. That shows the development of technology in the provision of bibliographic services. For the use of automated, mixed and manual systems see Tables VII, VIII and IX respectively.

Table VII

Use of automated systems for catalogue access points

Access Points	PAK (%)	MAL (%)	SAU (%)
Author	11	83	14
Corporate body	12	67	20
Title	11	83	14
Keywords	56	100	33
Journal title	18	50	20
Class number	33	83	17
Author/title	25	100	50
Series	17	83	20
Conference headings	20	83	20
Subject headings	18	100	14
Control number	67	100	75

Table VIII

Use of mixed systems for catalogue access points

Access points	PAK (%)	MAL (%)	SAU (%)
Author	21	17	29
Corporate body	19	33	40
Title	21	17	291
Keywords	11	0	33
Journal title	18	50	20
Class number	9	17	33
Author/title	0	0	25
Series	8	17	40
Conference headings	20	17	40
Subject headings	17	0	29
Control number	0	0	0

Forms of catalogue

PAK. Out of 19 libraries, 14 (74 per cent) use a single form and 5 (26 per cent) use more than one form of catalogue. Of the 14 using a single form, 12 use card catalogues and 2 use online. Of the 5 using 2 forms, 4 use card and online and 1 uses card and printed forms.

MAL. Out of 6 libraries, 4 (67 per cent) use a single form and 2 (33 per cent) use more than one form of catalogue. All using a single form have adopted the online catalogue. Of the 2 using more than 1 form, 1 uses card and online and 1 uses printed, online and microform forms.

SAU. Out of 7 libraries, 1 (14 per cent) uses single form and 6 (86 per cent) use more than one form of catalogue. The library using single form has adopted card form. Of the 6 using more than one form, 3 use card and online, 1 uses card and printed, 1 uses card and COM and 1 uses COM and online.

Table IX

Use of manual systems for catalogue access points

Access Points	PAK (%)	MAL (%)	SAU (%)
Author	68	0	57
Corporate body	69	0	40
Title	68	0	57
Keywords	33	0	33
Journal title	64	0	60
Class number	58	0	50
Author title	75	0	25
Series	75	0	40
Conference headings	60	0	40
Subject headings	65	0	57
Control number	33	0	25

The analysis shows that most of the libraries in Pakistan and Saudi Arabia use card catalogues. But use of the online catalogue is also significant. In Malaysia all libraries use online catalogues either alone or in combination. That shows the development of online technology for cataloguing services (see Table X).

Table X

Forms of catalogue

Forms	PAK (%)	MAL (%)	SAU (%)
Card	74	11	46
Printed	4	11	8
Online	22	67	31
COM	0	11	15

CONCLUSION

The survey findings show that there is an overall uniformity in the use of cataloguing tools in university libraries in various developing countries. On the basis of this we can plan for any kind of co-operative activities in

libraries at an international level. The dream of international bibliographic control seems to be coming true in this era. It is also obvious that, although it is not 100 per cent due to various hurdles, new information technology is rapidly replacing the old manual methods (i.e. card, printed and microform) of providing technical services in libraries. With the emergence of computer technology, we can see in the research results a number of new access points have become possible in catalogue searching. As a result, the use of library material has become easier and librarians can serve their clientele in a more satisfactory way.

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Subject Cataloguing in Pakistani Libraries*

WHY A SUBJECT CATALOG

While a book can have only one classification number and be shelved in only one place, it is quite possible that a specific book contains important material about several topics, or information about some subject which is to specialized to merit its own classification number. To compensate for this limitation of the classification scheme, library catalogs contain entries under subjects – sometimes several for a single title. It is found that more library users look for material on some subject than for a specific author or title. Entering material in the catalog under subjects involves a knowledge of the terms people use, and selection of as specific a term as the material warrants.

THE PURPOSE OF A SUBJECT CATALOG

The purpose of the subject catalog is to list under one uniform word or phrase, all of the materials on a given subject that a library has in its collection. A subject is the topic treated in the book, video tape or other work. A subject heading is the word or phrase used in the library catalog to express this topic. A subject entry is usually displayed at the top of the catalog record above the main entry, regardless of the format of the catalog (card, book, microform, or on-line). Library materials are given subject entries in the catalog in order to show what information the library has on a given subject. Properly made, the subject entry is a very important supplement to the reference tools in the library because it may enable the reader or librarian to identify, rapidly and surely, the material needed to provide information about a topic. It is also useful in locating a particular book.[1]

SUBJECT CATALOGUING IN PAKISTAN

Libraries in Pakistan usually maintain classified catalogs without subject indexes. The author and title entries, interfiled in some libraries, are referred to as a dictionary catalog. In still others, such as the State Bank of Pakistan Library in Karachi, there are separate classified catalogs, author, and title catalogs. Catalogs of Oriental language collections are kept in a separate sequence in spite of the fact that the Pakistan National Bibliography (*PNB*)

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* Source: "Subject Cataloguing in Pakistani Libraries." *International Cataloguing & Bibliographic Control*, vol. 26, no. 3 (July/September 1997): 68-70.

includes such publications in an integrated romanized form. Use of subject headings is most infrequent in these catalogs. This is equally true in cases of specialized libraries, and even in those of academic institutions.[2] Although the major part of the libraries' collection consists of English language publications, a number of languages are spoken locally in Pakistan, and libraries do have a rich collection in these languages. English language subject headings lists are primarily compiled to meet the requirements of Anglo-American countries. Oriental topics like Islam, Pakistan, and Pakistani languages and literature are not appropriately treated in these lists. Compilation of a local standard subject headings list is crucially needed. This list would fulfil the subject cataloguing needs of materials in Pakistani languages in the country as well as such collections in the libraries of the Western world.

ENGLISH BOOKS IN PAKISTAN

According to a survey, there are 69.4% books in English in Pakistani libraries.[3] All these books are imported from Western countries as well as published in Pakistan. Librarians do not have to face much problem to make subject catalogs of English books. There are a number of standard subject headings lists available for this purpose. The list most widely used by small public and academic libraries, is *Sears List of Subject Headings*.[4] The list used by most larger libraries is the *Library of Congress List of Subject Headings*.[5] Although there are some major differences in the use of terms, it is the degree of specificity and cross-referencing which chiefly distinguishes the two lists. Because the Library of Congress List is up-dated more frequently than Sears, reasonably correct headings for new subjects may be established without waiting for a new edition of Sears. On the other side, Sears is shorter and therefore cheaper and easier to use. Library of Congress issues LC Subject Headings weekly list and includes *New Subject Headings of Current Interest* in its quarterly cataloguing service bulletin. The weekly *Record* publishes LC cataloguing information which is cumulated in monthly and annual issues of the *American Book Publishing Record*. Through the Cataloguing in Publication (CIP) program, the Library of Congress cataloguing information mostly appears on the verso of the title page, which is useful for catalogers.

BOOKS IN ARABIC, PERSIAN AND LANGUAGES OTHER THAN URDU

Some 2.7% and 1.8% of the total number of books in Pakistani libraries are in Arabic and Persian respectively. Arabic and Persian books are mostly

produced in Arab countries and Iran, so they are imported from there. Lists of subject headings have been developed in the Arab world and Iran and they are easily available for use. The most popular list in Arabic is Arabic Subject Headings prepared by Cataloguing Department, King Saud University Libraries, Riyadh, Saudi Arabia.[6] Only 2.6% books are in Sindhi, Punjabi, Pushto, Baluchi, Bengali, and Gujrati languages. The number is not so big as to create a problem for cataloguing. So, the need was never felt to develop a subject heading scheme for the literature in these languages. Lists in Urdu or English may be used for this purpose.

URDU – THE NATIONAL LANGUAGE

Pakistani libraries possess 22.9% books in Urdu, and due to the encouragement of Urdu at Government level and the rapid growth of research and publication of Urdu books, there are chances of 10% to 15% increase in this ratio. Some efforts are seen in the development of subject heading lists for Urdu books. We shall discuss and review these efforts in detail.

Entizam-e-kutub khanah (Library Administration) by Muhammad Shafi[7]

Published in 1949, just after the birth of Pakistan, it was the first Urdu book on library management as well as the first attempt to create lists of Urdu subject headings. One chapter is specified for subject cataloguing. About 1100 subject entries are spread over 33 pages. See and See also references are used. Pakistan is treated as pattern heading for countries. It includes 35 headings on Urdu language and literature, 35 headings are starting from the words 'Islam' and 'Islamic,' and 45 are given for Pakistan. Quran is allotted 15 headings and cross-references. The list is sufficient for small public and school libraries but has not fulfilled the needs of academic and special libraries.

Nizam-e-kutub khanah (Library Management) by Altaf Shaukat[8]

This is also a general purpose book on library administration and management. Published in 1970, it was written for beginners and the students of certificate level courses. Its fourth edition was published in 1987. Spread over 44 pages, a list of about 1420 subject headings is given. Cross-references like See and See also are used. Classification numbers based on the 16th edition of Dewey Decimal Classification are also given with each heading. It includes 49 headings on Urdu language & literature, 140 headings

starting from Islam, 123 on Pakistan and 45 headings and sub-headings are given on Quran. This list also fulfills the needs of libraries with a small collection in Urdu.

Urdu translation of Sears List of Subject Headings (Master's Theses)[9]

Research was conducted in the Department of Library Science at Punjab University, Lahore by four students of Master's in Library Science i.e. Yaqub Ali Chaudhary, Imran Ghani, Nazir Ahmad, and Anwar-ul-Haque. The students translated the 10th edition of *Sears List of Subject Headings* into Urdu and submitted this as their theses to the University. A comprehensive introduction is included which discusses the purpose, types and usage of subject headings. All the headings with scope notes were translated into Urdu. See references are used but See also references could not be used. The list is alphabetically arranged both in English and Urdu sequences. 150 more headings on Islam & Quran, and 150 headings on Pakistan have been added in the list as appendices. To localize the translation, 67 headings and sub-headings on Chicago, which were used as key headings for cities in Sears, have been translated as Lahore. In the same manner, the word 'American' has been rendered into Urdu as 'Pakistani.'

Quaid-e-Azam Library Urdu subject headings[10]

Quaid-e-Azam Library, Lahore did a lot in developing technical services with special reference to Pakistan. With its foundation in 1982, a committee was set up to devise a classification scheme for Islam, Pakistan and local languages and literature. The task of the compilation of a subject headings list for Urdu books was also assigned to the committee. In 1983, the Urdu subject headings list was completed with 3200 terms spread over 80 pages. This list has never been formally printed or published, but its photostat copies are being used in a number of libraries. See references are mostly used in the list, but only a few terms include See also references. The list is based on Shafi's and Altaf's lists. The existing Urdu books in local libraries were also a source for devising new headings. With the arrival of new books, the catalogers at Quaid-e-Azam Library, add new headings in the list and keep it up-dated. 125 headings are included on Urdu language & literature. 200 headings start from Islam & Islamic. 200 headings are given on Pakistan. Quran has 88 headings in the list. Allama Muhammad Iqbal (Thinker of Pakistan and the national poet) has been made key heading for individual persons and 66 terms and sub-divisions are given to this subject.

Mauzui unwanat (Subject headings: Urdu translation of Sears List of Subject Headings with detailed additions on Islam, Pakistan and Urdu language & literature). Translated and compiled by Yaqub Ali Chaudhary[11]

Compiled by an experienced University librarian, it is the first complete book on Urdu subject headings. It is based on the 13th edition of Sears. It includes a detailed introduction on the principles of assigning subject headings comprising 48 pages. About 7600 terms are spread over 422 pages. In order to show the coverage of heading, scope notes are given, e.g.

> **Taskeek (Coinage)**
>
> Use for works on the processing and history of metal money. Lists of coins and works about coins and coin collecting are entered under "Sikkay" (Coins).

To differentiate the headings with others, parenthetical qualifiers are used, e.g.

> **Tasviya (Nafsiyat) - Adjustment (Psychology)**
> **Soccer (Game)**

Classification numbers, based on the 19th edition of Dewey Decimal, are given with each heading.[12] Islamic topics and Urdu language & literature are given a special treatment and many new terms have been added. 150 terms on Urdu language & literature, 70 terms starting from Islam & Islamic, and 143 headings on Pakistan are given. Quran has been expressed by 18 headings. Lahore as pattern heading has 50 terms and Muhammad (The Prophet) has been allotted 30 terms.

Mayari mauzui surkhiyan: Pakistani kutub khanon kay liya (Standard subject headings: for Pakistani libraries) by Zumurd Mahmood and Mahmood-ul-Hassan[13]

This is a joint outcome of 16 years struggle by two eminent working librarians i.e. Mr. and Mrs. Mahmood-ul-Hassan. It is the first Urdu subject headings list which can be considered a comprehensive list. The list includes about 8300 headings most of which are specifically designed for Pakistani needs. The following topics have been given special treatment:

- Islam, Quran, Mysticism, Fiqh (Islamic law), Hadith (Tradition), and Muslim religious leaders.

- Urdu language, literature, and forms, e.g. Poetry, Criticism, Urdu writers and critics, etc.
- Pakistan, its history and geography, national leaders, like Allama Iqbal, Muhammad Ali Jinnah (The founder of Pakistan), etc.
- Four provinces of Pakistan, Northern and Federal Areas, private and government departments, institutions, and selected cities, etc.
- Pakistani political parties, associations, organizations, and other political leaders.

335 free floating standard sub-divisions are provided for the first time in an Urdu list. For general understanding, English terms are also given with the sub-divisions.

Cross references like See and See also are used in a large number. Most of the headings are explained by scope notes, e.g.

Tadrees (Teaching)
Use for the art and techniques of teaching. For other subjects and disciplines use standard subdivision 'study and teaching'

Parenthetical qualifiers are also given, e.g.

Insan	**Man (Islam)**
	Man (Biology)
	Man (Christian theology)

With some terms, to explain the meaning, English terms are used, e.g.

Illat-o-Malool
Use for Cause and effect

Ilm-e-Atfal
Use for Child study

Dewey Decimal class numbers are given with each heading. Numbers are based on 18th, 19th, and 20th editions of the scheme. As already mentioned, Pakistani topics are given special emphasis. 142 headings are designed on Urdu language & literature. Headings starting with the words Islam & Islamic number 317, 440 headings are allotted to Iqbal, and 374 headings are given to Pakistan. Lahore has been used as pattern heading for cities and given 80 entries. Quran has 66 entries, Muhammad, the Prophet, contains 15 headings, Jinnah, the creator of Pakistan, is shown by 163

entries. The list, to great extent, fulfils the needs of subject cataloguing of Urdu books.

Table 1.

Number of headings & cross references on Pakistani topics in various English and Urdu lists

Topics \ Lists	LCSH	Sears	Shafi	Altaf	Theses	Q A L	Yaqub	Zumurd
Islam	269	8	35	140	130	200	70	317
Quran	86	1	15	45	20	88	18	66
Muhammad (The Prophet)	20	0	1	0	0	1	30	15
Iqbal, Sir Muhammad	0	0	0	0	0	66	0	440
Jinnah, Muhammad Ali	0	0	0	0	0	0	0	163
Pakistan	47	0	45	123	150	200	143	374
Lahore	0	0	0	0	67	0	50	80
Urdu Language/ Literature	67	0	35	49	0	125	150	142

Table 2

Facilities provided in various English and Urdu lists

Facilities \ Lists	LCSH	Sears	Shafi	Altaf	Theses	Q A L	Yaqub	Zumurd
Total number of headings (Approximate)	186000	16000	1100	1420	*	3200	7600	8300
Standard Subdivisions	Y	Y	N	N	N	N	N	Y
See references	Y	Y	Y	Y	Y	Y	Y	Y
See also references	Y	Y	Y	Y	N	Y	N	Y
x references	Y	Y	N	N	N	N	N	N
xx references	Y	Y	N	N	N	N	N	N
Classification number	Y	Y	N	Y	N	N	Y	Y

* Information is not available.

CONCLUSION

Local language publications particularly in Urdu have been increasing in number in Pakistan over the years. On the other hand, no serious efforts have been made in subject cataloguing of these books. Lack of standard tools for assigning subject headings created the problem of inconsistency and incompatibility of subject catalogs of these books in various Pakistani libraries. Some efforts have been made in translating the available subject headings lists for English books but they themselves lack in the coverage of headings on Pakistani topics like Islam, Quran, Pakistan geography & history, and Urdu language & literature. The need for the compilation of a standard list of Urdu subject headings was felt just after the birth of Pakistan but due to the paucity of mental and material resources, this important task could not be executed. Now with the publication of Zumurd's list, we can say it is the first Urdu subject headings list which covers most of the Pakistani topics in detail. But this list is not free from errors. For example, cross references have some mistakes within them. x and xx references are not given either.

As a matter of fact, compilation of a complete subject headings list is not possible by a single person. In the United States, this assignment is done by the American Library Association and the Library of Congress. Unfortunately, all attempts in Pakistan in this regard were done by single persons and usually based on an English list or materials possessed by a single library. It is the collective duty of the Pakistan Library Association and the Pakistan National Library to form a working committee on this vital issue of librarianship. Help may be taken from Muqtadra Qaumi Zaban (National Language Authority) and Anjuman-e-Taraqqi-e-Urdu (Organization for the Development of Urdu) for translation of scientific and technical terms from other languages into Urdu. Already compiled lists may also play a starting point if they all are properly edited, interlinked, and put together. As India has a number of Urdu books in its libraries, the Indian Library Association should also consider the possibility of working out a uniform subject headings scheme in Urdu.

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Let's Save Our Cultural Heritage: An Introduction to Library Security System*

INTRODUCTION

"Security" is defined as protection; assurance or a state or sense of safety or certainty. The word "secure" means not exposed to damage. Security implies a stable, relatively unchanged atmosphere in which individuals or groups may pursue their ends without disruption or harm, and without fear of loss or injury. Perfect security never did exist, and never will, in this chancy world, but controls which enhance security do exist.

Now we come to the "Security in libraries". Libraries are set up with the public fund and these are declared as public places. Valuable cultural materials and the treasures of knowledge of a nation are kept here. Libraries are open to the members of the community. A number of people use them. So, there must be some measures to secure the library resources.

The phenomena of book theft in libraries is as old as the libraries themselves. In fifteenth and sixteenth centuries, books were kept chained to the shelves. The Assyrians and the Greeks knew the problem very well and protected their collections of clay tablets by placing curses on those who would dare to steal such treasures. In fact, libraries were then regarded, not as organizations for furthering the use of books, but as institutions for preserving them. But, with the passage of time, this trend turned into a new one, that, in S. R. Ranganathan's words, is "Books are for use." By the introduction of this usage trend, the libraries have to adopt open access system for their collections and the security problems are rapidly increasing.

The problem today is not simply preventing the theft of resources. The whole question of library security is much larger, more complex matter. The emphasis continues to be on the physical safeguarding of materials; however, the concept must be extended to include the security of data and files, as well as the personal safety of employees and library users.

SECURITY PROGRAM

First of all, a senior library staff member should be named Security Officer, with the responsibility and authority to carry out the security program. Otherwise, an experienced person may be recruited for this

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* Source: "Let's Save Our Cultural Heritage: an Introduction to Library Security System." *Pakistan Library Association Journal*, no. 14 (January-May 1993): 48-63.

purpose. The Security Officer's first priority should be to plan a program, starting with a survey of the materials, including physical layout and staff, and seeking the advice of appropriate personnel, life security officers and of outside consultants from law enforcement agencies. A security policy should be written by the Security Officer. The policy should include a "standing operating procedure" on dealing with possible library crimes: determining suspected thieves, reporting crimes to the proper authorities within the organization, and to the local and other legal authorities. The security staff members must know the laws for dealing with library crimes applicable in their political and geographical area. The security policy should also be kept up-to-date.

PHYSICAL SECURITY

Physical security concerns with those mean by which a given facility protects itself against theft, vandalism, sabotage, unauthorized entry, fires, accidents, and natural disaster. Physical planning includes protection of the 1) grounds around the building, 2) the building's perimeter, 3) the building's interior, and 4) its contents.

Physical barriers are normally utilized to define the boundaries and deter the penetration. Barriers are such items as fences, walls, gates, windows, doors, grills, or any other construction that will serve as a deterrent to unauthorized entry. Physical barriers can only be expected to delay a determined intruder and, for this reason, other security controls must be integrated into the overall security plan.

In respect of the physical barriers, following things should be kept in view:

1. At the stage of construction planning, the architect should eliminate hidden recesses, abutments, projections, or other building features that would allow concealment of intruders.
2. If building walls are painted a light colour, it is usually easier to spot the outline of an intruder on the premises at night.
3. Masses of shrubbery or trees growing near a structure can provide cover that would allow a criminal to attack a building wall. It is therefore recommended that plants and trees should be no closer than 40 feet from a building, with a ground foliage and shrubbery limited to approximately 2 feet in height.
4. A tree or telephone pole located near a building provides easy access to a building roof, an area of the building gate can be cut through with comparative ease.

5. Fencing is usually used as perimeter barrier. Common types of fencing are chain-link, barbed wire and concertina wire. The chain-link fencing is mostly recommended. The number of gates in fences should be the minimum necessary for access.
6. Masonry walls may also be used to form all or part of the perimeter barrier. A wall should be at least seven feet high with a top guard of three or four stands of barbed wire.
7. Private passenger vehicles should be prohibited from parking in areas nearby or immediately adjacent to buildings. Access to employee parking areas should subject to security controls.
8. Good lighting is of primary importance not for crime detection but for crime prevention. Adequate lighting should be provided at night for the following areas:

   Entrances and exits; Along fence lines; parking areas; walkways; building entrances; and general lighting.
9. Doors should be kept locked. Emergency exits should be secured by alarming them.
10. Windows should be as high as possible. These should be protected by grills or metal bars.
11. To be effective, barriers have to be well maintained. Breaks or damage to the structure should be repaired as soon as they are discovered. Frequent inspection of the barriers must be made by the guard force.

FIRE PREVENTION

The single most devastating threat to a library is fire. A minor fire can destroy a lot of valuable materials. There are many hazards associated with fire, like fire or flames, smoke, water, rough handling, salvage, equipment and materials used to combat the fire, theft, vandalism, etc.

Security staff must know what fire is and how it is caused, in order to understand how it is prevented. The elements of fire are:

1. Fire is a chemical reaction (rapid oxidation that creates heat.)
2. An oxidizing agent, combustible material, and ignition source must be present for combustion to take place.
3. Combustible material must be heated to its ignition temperature before it will burn.

4. Combustion will continue until one of the above elements (oxidizing agent, combustible material, or heat) is removed.

Classes of Fires

Fires are generally classified into three types:

A. Fires in ordinary combustibles such as paper, packing boxes, wood, cloth, etc., which are normally extinguished by cooling down the burning fuel.

B. Fires involving flammable liquids such as gasoline, oil, naphtha, etc., which are best extinguished by smothering.

C. Fires involving electrical installations, appliances, and wiring, in which the use of an extinguishing agent that is a nonconductor of electricity will prevent electrocution.

Fire Extinguishers

The smaller the fire, the easier it is to extinguish. Authorities on fire fighting report that in ordinary combustibles, fire can multiply itself 50 times in 8 minutes. Unless the fire is extinguished from the outset, it may be out of control.

Authorities recommended that the fire department be notified at the outset, but portable extinguishing equipment should be used as soon as possible. Portable hand extinguishers, strategically places, properly maintained and used, are indispensable in any fire protection program.

In a fire prevention plan, it is important to anticipate the type of fire that is likely to occur and to provide extinguishers for that specific class of fire. Extinguishers are classified as A, B, and C, according to the type of fire they are designed to put out. Water has the greatest cooling effect of any readily available substance. Since a cooling effect is needed for class A fires, water is the principal ingredient in all class A, or cooling type extinguishers. But, extinguishers of this type can not be recommended for a library because water itself destroys the books and other library materials.

Class B extinguishers smother fires by cutting off the oxygen supply. Contents of class B extinguishers vary; there are a number of powdered chemicals and foam-producing substances, dense, heavier-than-air gases, and quick-vaporizing liquids that may be used.

Class C extinguishers use an extinguishing agent that does not conduct electricity.

Fire Detectors

There are many good fire detectors available for library use. Some of them detect smoke, flame, a sudden increase in temperature, or atmospheric changes that result from fire. Perhaps the best detector for a library is the ionization type detector. It is activated by changes in the structure of ions in the atmosphere and may be set off when products of combustion change the chemical content of gasses in the air. Rate-of-rise detectors are activated by a sudden increase in temperature. A fire detector can be connected to an audible alarm.

Preventive Measures

To formulate a fire prevention plan for a library the following points must be kept in view:

1. Smoking in reading rooms or stock areas must be prohibited. A separate room may be specified for smokers.
2. Gas heaters must not be installed in a library.
3. Fire proof material should be used in building construction.
4. Wooden furniture should not be preferred for a library.
5. Fire fighting equipment should be installed at proper places and the employees should be trained to use them.
6. Electrical wiring must be inspected regularly for any sign of wear or malfunction.
7. There should be emergency exits in the building.
8. It should be the responsibility of the Security Officer to make a daily inspection of the facility to determine the effectiveness of fire prevention procedures.

WATER DAMAGE

Water can do serious damage to paper items of all kind. The library authorities therefore, must take care to provide security against water damage by flooding, broken water pipes, etc. Water pipes running through the library should be checked regularly to minimize the possibility of disaster. In areas where such damage has occurred in the past and is likely to recur, water gate alarms should be installed to warn off danger.

PERSONNEL SECURITY

Most physical security devices and systems may prove ineffective unless honest employees available to use them. It is therefore, essential to hire honest employees and to encourage them to remain honest. Stability and dependability are highly desirable traits in employees. Lack of stability may be indicated by martial problems, uncontrolled buying or unpaid bills, bankruptcy, habitual absenteeism, job switching, and other personal problems. Employees may resort to embezzlement or theft if personal pressures become too great. Background information about an applicant should be obtained. Without prying into the personal lives of employees, managers should maintain enough contact to be aware when employees get into difficulties that could lead to embezzlement or theft.

An effective security program usually seeks to motivate employees toward continued honestly by letting them know that management relies on them and by requiring high performance standards. Employee motivation is strengthened if management officials set a good example. Explaining the need for security rules may also help. Some organizations remind workers of security responsibilities in so-called security awareness sessions, in which objectives and needs of the security program are explained. Usually employees are far more likely to accept security regulations if they understand the problems that management has.

Temporary employees are usually more likely than permanent employees to steal or embezzle funds because they do not have the same loyalty to the organization and normally have less to lose. Employee bonding may be a valuable technique if use to back up the security program, but bonding should never be used to replace regular security measures.

COMPUTER-DATA SECURITY

In recent years, computer is being rapidly introduced in Pakistani libraries. Library services such as acquisition, cataloguing, circulation, etc. have been computerized. Computer installations also have some security problems. Following steps should be carried out to secure the computer hardware and software.

1. Fire is the most serious threat to the entire computer installation and records, so the computer location should be near the fire protection facilities.
2. Ionization type fire detectors are recommended for computer installations.

3. Computer tapes or disks are usually ruined at a temperature of 150 F, so computer rooms must be air-conditioned.
4. Computer installations should be secured from heat, steam, dust, and smoke. For this purpose, smoking and eating in computer rooms should strictly be prohibited.
5. Physical access to the computer facility, equipment, and data storage should be limited to authorized persons.
6. Important data files should be duplicated and stored in a separate, secure location.
7. The backup tapes or disks should not be available to employees at the computer centre.
8. Code-identified access should be made to the data base, and only to that part of the data base to which an individual is entitled.
9. Most important files should be made hidden.

THEFT AND MUTILATION OF LIBRARY COLLECTION

It is the most common problem being faced by the Pakistani libraries. According to a survey conducted by PLA Sub-committee for Standardization of Book Losses in 1979, the rate of lost books in our different libraries ranges from 0.06 to 5.0 percent per year.

There are many causes of book theft. In our country, the people do not consider the theft of a book from a library as a crime. Most books are stolen from academic libraries. Jenkins lists five basic types of book thieves:

1. The kleptomaniac, who cannot overcome a compulsion to steal.
2. The thief who steals for personal use.
3. The thief who steals in anger.
4. The casual thief who steals when an opportunity presents itself.
5. The thief who steals for profit.

Theft is a very complex problem that cannot be totally overcome. I must be the responsibility of each library to secure its collections insofar as possible. In preventing book theft and mutilation in the libraries, some recommendations are given below:

1. All library materials should be stamped with ownership mark.
2. Non-book materials should be kept in separate room.
3. There should be only one point of entry and exit in the library.

4. Proper arrangements should be made for keeping the personal belongings of patrons, including cases, bags, books, etc. at the entrance.
5. Photographic identification cards should be issued to all members and be checked at the entrance.
6. A separate reading room should be provided for study of personal materials of the users.
7. Circulation desk should be placed close to the door.
8. Photocopying machines should be installed for public use and be as inexpensive as possible for the patrons.
9. Multiple copies of popular titles should be purchased.
10. Check-out process should be made as speedy and as pleasant as possible.
11. The patrons should be allowed to take out reasonable amount of material at one time.
12. There should be a reasonable loan period for all items.
13. Renewal of materials should be made simple.
14. Proper record for the library materials issued should be maintained and proper records for transfer and movements of books from one section to the other be also kept.
15. The staff should be insisted to be as friendly and as helpful as possible so that patrons feel comfortable and welcome.
16. The number of hours and days that the library is open should be as increased as possible.
17. Library hours should be arranged around the convenience of the patrons rather than the staff.
18. Staff should be trained in careful supervision and should report suspicious behaviour immediately.
19. The security staff should be empowered to make personal check of any person, in case of any doubt.
20. The problem of book theft should be publicized and public's awareness be increased.

ELECTRONIC SECURITY SYSTEMS

There are electronic security systems of many kinds being used in the advanced countries. In a developing country, like Pakistan, if the library budget allows, these systems may also be installed. They are very useful to

minimize the book theft in libraries. The system is installed at the exit of a library building or facility to detect items from the library collection being removed without loan authorization.

The electronic security systems operate on an electromagnetic principle. Treated targets are placed in library materials; when those materials are taken past sensing screens, strategically located by the circulation desk, the targets trigger an alarm, and the gate is closed. If a book is properly charged out, however, no alarm will be triggered.

All systems operate in one of two modes: "bypass" or "full circulation". The bypass system triggers an alarm when a book treated with a permanently activated target is taken through a detection field without being passed around the field by an attendant. The full circulation mode requires initial sensitization and subsequent desensitization when a volume is checked out. The patron then carries the book through the detection field.

Closed-circuit Television

Closed-circuit television (CCTV) is an important factor to be recommended whenever electronic security devices are being considered. It is commonly regarded as an obvious technique to utilize when manpower is to be reduced. It is best suited for installation at entrances and gates to control the entrance and exit of library patrons. A CCTV operating unit is generally composed of a camera, a monitor, a control unit, and the necessary cable to connect the two. Because of various lenses and accessory camera equipment available, CCTV has a wide range of installation applications. Remote-control equipment can also be obtained. The use of small hidden cameras and lenses has proven very effective for identifying criminals. Camouflaged cameras in simulated decorations, lamps, fixtures, etc., prove very effective in observing library patrons without their knowledge.

The camera must be installed carefully. It must be remembered that the camera will require the same amount of light and all other advantages which would make a naked eye effective in the same location. It should also be pointed out that CCTV coverage is usually a waste of money unless personnel are available to monitor the TV screen adequately and to call for immediate assistance if a potential problem is observed. Additionally, TV monitoring and camera units need regular inspection and replacement if they are to remain effective.

SPECIAL COLLECTIONS SECURITY

Special collections include rare books, manuscripts, archives, and other more valuable items in a library. As these items cannot be replaced easily, so there should be some special measures for the protection of special collections. The special collections building or area should have as few access points as possible, with the same entry exit for patrons and staff. Proper marking of the materials is also a deterrent to theft. Most valuable items in the collections should be marked with an indelible ink.

Researchers should be required to present photographic identification and a reasonable explanation of their need to use the materials. Readers should not be allowed to take their personal materials into the reading room. They should be watched at all times. Readers should be limited to only those books, manuscripts, or other items which are needed at one time to perform the research at hand. Each item should be checked before being given to the reader, and when returned. Readers should be required to return all library materials before leaving the reading room area, even if they plan to return later in the day to continue their research. The special collections staff must be able to identify who has used which material by keeping adequate check-out records.

Microfilming is also a precautionary way of protecting valuable materials. Either particularly valuable materials should be removed from collections and replaced with photocopies or the entire collection be microfilmed.

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Information Technology in Libraries

A Pakistani Perspective

Khalid Mahmood

"Duly documented and illustrated these articles provide necessary details which help not only in understanding the subject of library automation but also ascertaining the cost-effectiveness of various softwares. They are readable and present a complete overview of the present status of use of both hardware and software in the country ... It is worthwhile to note that the author himself represents the third generation of library leadership in our country and that they have dedicated themselves to promote the cause of library automation in Pakistan so that our country could enter the ensuing 21st century with the augmented facility of access to the resources and services of our libraries thereby enabling scientists and researchers, *insha-Allah*, to get their needed information quicker and faster and at the right time for completing their research.

These writings are a valuable addition to our literature. They will serve as a useful guide to help providing computer-assisted library and information services in Pakistan ... This is the record-breaking beginning of Khalid Mahmood in his early career. I, therefore, salute this budding author for this achievement.

All in all, the present writings of Khalid Mahmood are useful and will serve as a valuable source material for all and sundry in the profession. The learned author thus deserves our gratitude for this valuable addition to the literature."

Dr. Anis Khurshid
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